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REMARKS

ON THE GEOLOGY OF THE VALLEY OF THE MISSISSIPPI.

NO. I.

AN accurate geological investigation of an extent of country, so vast as the valley of the Mississippi, would require the united labours of our present geologists for the residue of their lives; nor would the concentration of knowledge thus obtained be sufficient for the object desired. They could only inform us respecting the surface of this extensive district, and the various strata, as they appear on our mountains and in our vallies. They cannot, at the present time, extend their researches to the depth below, and we must wait until numerous deep excavations are made to obtain the mineral treasures of the earth, before we can definitively pronounce on the geology of our country. This event can only take place at a future period, when an overabundant population compels the inhabitants to seek their subsistence in the labyrinths of our future mines and amidst the deep excavations which will be made to procure salt, and for other purposes. Such labours, when accurately investigated, will afford innumerable additional facts relating to the science of Geology, and be the only means by which the masters of that profession can definitely pronounce on the structure of this great valley.

It would, nevertheless, be an injury to the progress of science if we should refuse to communicate any information we at present possess. A single fact, noted with accuracy, is always worthy of record. It is at least a stone hewn for the temple of science, which, when fitted into its place by competent architects, may help to rear that stupendous

fabric, which we hope and believe will, at some future time, be displayed to the eyes of our posterity. They may see the majestic edifice completely built; their wondering eyes will, in that case, behold the wisdom, by which our great Creator has fabricated our globe. This must prove the utmost height of human perfection in natural history, and, when joined to an equally progressive improvement in moral and religious knowledge,will form the achme of sublunary perfection.

It is with a view of stating certain facts, that I have undertaken the following cursory remarks on the Geology of our western country, which, in order that I may be more fully understood, must be prefaced with some short observations on the mountain limits by which this immense valley is circumscribed on the east and west.

The valley of the Mississippi extends from the Allegany to the Rocky Mountains, and from our great Northern Lakes to the Gulf of Mexico. The southern part of this immense territory is lessened in breadth by those mountains, whose numerous streams form the head waters of the Rio del Norte, Arkansas, Red River, &c. &c. I have little geological information with respect to this extensive range of mountains, but from report believe them to be in some parts of volcanic, and in other places of primitive formation, with depositions in the vallies and certain hills of the secondary classes. My travels in this immense valley are circumscribed, and I must consequently limit my observations to those parts which I have visited. My journies were not often made with views to geological information, but, when passing along the road, my attention has generally been drawn to this subject. Though I possessed little opportunity of minute investigation, this confession will not, I hope, lessen confidence in those facts which I relate. What I state is from actual observation, minuted down at the time.

The Allegany Mountains may be said to extend from New Hampshire to Florida, though the really contiguous chain only reaches from the state of New-York to Georgia. In New-England these mountains are of primitive formation, but in the state of New-York the Katskill Mountains are in their outer parts secondary, whilst the inner nucleus exhibits every proof of primitive origin.

We cannot trace this range, in a distinct manner, until it approaches the state of Pennsylvania, where, in one connected ridge, it forms, under the name of the Allegany

Mountains, that great division which separates the waters of the Atlantic rivers from those which flow, by means of the Mississippi and other streams, into the Gulf of Mexico. The various subdivisions and spurs of this chain, when separated in the north and eastern parts, uniformly display primitive formation. It extends southward as far as Easton in Pennsylvania, and from thence becomes gradually lost in the transition and secondary formations of the continuous ridge of the Blue Mountains in that state. This range again assumes its primitive formation in the northern parts of Virginia, and the same observation will apply to the grand dividing ridge of the Allegany mountains.* In Pennsylvania that great range is, to outward appearance, perfectly secondary, being of flœtz or horizontal formation, and composed of schist, limestone, sand stone, and rounded quartz pebbles, agglutinated together, the whole strata of which contain more or less numerous organic remains. This chain of mountains decreases in height as it enters Virginia, and towards the town of Montgomery or Christian Court House, which is the lowest part of the whole range, it becomes completely primitive.

From these observations I am induced to believe that the central base of the entire range of the Allegany mountains is of primitive formation, and that the Atlantic Ocean deposited, in this extensive barrier, those secondary formations and numerous oceanic relics, which now form its present secondary exterior surface.

I am obliged to disapprove in part of the new nomenclature adopted by our modern geologists. Their information and scientific abilities are undoubtedly far superior to the little knowledge which I may possess on these subjects: but my personal observations continually contradict the theory which they have formed from observations made in certain districts of Europe. I am also obliged, with still more deference, to apply the same observations to Mr. W. M'Clure and other geologists of our own country. I cannot conceive that the general appearance of strata is sufficient to designate a formation; that the characteristics of veined

*It is with regret that I am obliged to differ from Mr. M'Clure, whose Geology of the United States contains many important facts, and a vast deal of new information. This gentleman did not travel through the whole district of country which he described, and consequently depended, in many cases, on the information of others. It is owing to this circumstance that his map will not be found to agree, in many respects, with my observations.

or granulated limestone in contradistinction from those which are more homogeneous; that schist, which contains minute microscopic particles, in opposition to that which is considered perfectly uniform in texture, are distinguishing proofs of one formation in preference to another. I have been led even to doubt whether the horizontal or dipping positions of the strata are any proof of a real difference between the secondary and transition formations. It is an assured fact that among certain of our horizontal limestone and slate strata no organic remains whatever are discoverable, though in situations both above and below, petrifactions may abound. The observations hereafter made will also prove that the strong strata of a perfectly secondary country do in many instances dip at a very considerable angle. I should therefore, if possible, wish to discard the transition and old red sandstone formation out of the geologist's vocabulary, though,for the sake of being understood, I shall be obliged to use the same expressions myself. I have shewn specimens of limestone to our most experienced mineralogists, which they were obliged, by every rule, to pronounce primitive, though procured from perfectly secondary formations. I have seen limestone in horizontal strata intermixed with white opaque veins of chrystalized carbon of lime, although the Wernerian school consider this a proof of transition limestone. I have seen slate in every formation partaking of characters which are presumed to belong exclusively to one class, and I have also seen districts of country containing numerous organic remains, whose strata dipped in the manner usually ascribed to the transition formations. This circumstance is the more remarkable as I have every reason to believe these dipping sandstone formations lie on a bed of horizontal limestone.

The Allegany mountains in Pennsylvania are to the extent of our present researches and observations perfectly secondary, but, as I have before remarked, they decrease in height upon entering the state of Virginia, and gradually become primitive as they approach the town of Montgomery. At this place there seems to have been a break or destruction of the whole upper surface of the mountain. The mass which once composed its long extended summit has been washed away, and its debris carried down in two several directions to an immense distance.

The Banks of New River contain numerous fragments of rounded sandstone, which must have been washed from the

Allegany mountains. This debris is, however, more particularly remarkable in a rectangular western course from that range. The head springs of the Holstein jet from the western banks of the New River, a low range of hills forming the only immediate division.

The above described debris from the Allegany seems to have swept over the small vale in which the New River at present runs, and rolled its old red sand stone rocks in a western direction until they broke into innumerable pieces, and, rounding by attrition, formed hills of boulder stone on each side of the valley in which the Holstein River now flows. These hills of boulder stone are in many places high, and consist of rounded fragments, from the size of gravel to dimensions of many feet, according to local circumstances. They are observable on the banks of New river and extend in the direction of the Holstein, according to my own observation, as far as the boat ford, a distance of one hundred and forty miles, although I have every reason to believe that the same deposition may be found much lower down, and indeed even to its mouth, which, with the Clinch river, forms the Tennessee. I have not visited that spot since I began to pay any attention to Geology, but recollect that the soil was poor and chiefly composed of fine gravel.

I must not omit to mention that the above described hills of boulder stone, on the borders of the Holstein river, rest on a bed of flœtz limestone abounding with organic remains.

The above remarks may prove an important addition to Mr. Jefferson's observations on the great Shenando valley described by him as bounded by the Allegany and Blue Mountains. Mr. Jefferson presumes that, at some remote era, it was a great fresh water lake, similar to those now existing to the north, and that, bursting its barrier through the Blue Mountains at Harper's ferry, it emptied itself into the Ocean. Our late highly respectable and literary president did not probably take into view the trifling superior height of this valley as it extends to the south. The Shenando runs on the western side of the Blue Mountains and is immediately contiguous thereto: its waters are, in fact, almost exclusively from the western springs of the Blue ridge. The great streams, such as James River, descend immediately from the Allegany to the Atlantic. With such a large outlet to the south it is scarcely supposable that any lakes

could have been extensive. But we have a still more efficient proof. If such an immense water lake had existed we should discover numerous conservata or petrifactions of fresh water shells and other similar organic remains. This however is not the fact, and I have only to say that all the petrifactions which I have seen from that district of country, as well as all other information, indubitably prove that they are of marine origin.

I wish that some of our modern geologists would allow a little more power to Noah's deluge. I cannot argue with atheists. The minds of such beings are sunk into an abyss of darkness which no faculty of mind belonging to human nature is able to meet on approximating grounds. Let them die with the beasts and tigers of the forest, their avowed brothers in origin and final extinction. I can, nevertheless, argue with those, whose unfortunate prejudices have led them to doubt of the truth of Mosaic history, but who, notwithstanding, admit that which all nature proclaims, the being and providence of a God. Upon such principles, the Creator of our globe must have founded it on certain physical laws, which, for the time then existing, he, in his infinite wisdom, thought most fit for the purposes designed; having, at the same moment, reference to such future changes as his prescience foresaw would be necessary for the ultimate object of his beneficent creation. In this point of view I cannot conceive but that the Creator could, at his wise pleasure, produce a total alteration in what we now term chemical affinities and physical effects. No modern geologist pretends to deny the evident relics of an universal deluge. The histories of all nations, as well as the facts daily brought to observation, corroborate this truth beyond the power of rational controversy. If such an incident took place it must have been by the miraculous power of the Almighty, for we well know that, according to present physical arrangements, no such circumstance can happen. It is impossible, in the natural course of things, for the vapours of the atmosphere to inundate the earth, and we must therefore presume that a great chemical change took place, such as dissolved certain solid substances, and occasioned their oxygen and hydrogen gasses to form the waters of the flood. If such changes took place it is easily conceivable that the most solid rocks may have become comparatively soft, and that others were in a state of fluidity. Under circumstances such as these a much greater

change may have taken place during the time of the deluge than our modern geologists are disposed to admit. My argument may be thought visionary, yet the fact of a general deluge, and the great chemical changes consequently necessary in our globe, must be considered as indubitably proved, even by those skeptical geologists, who admit the faculties of their own senses, when they acknowledge that our highest mountains afford marine organic remains.

Hutton's theory is, to a certain extent, supported by modern volcanists, but his ideas, as respects the gradual decomposition and regeneration of our globe, are given up on all hands as unfounded. Stubborn facts disprove this part of his theory in every respect, and all modern writers have again recourse to one or more general floods. By such the principle of a probable great chemical change in the then state of our globe must be acknowledged.

I have undesignedly, and perhaps improperly, wandered from my immediate subject; but, amidst the thousand and one tales of world-making, so eloquently and romantically described by our modern geologists, I hope the simple hint, that a general deluge may have produced more important chemical effects than is generally presumed, will not be thought wholly unworthy of a philosopher's notice. The supposition, that a vast number of centuries is necessary to form gravel, is, at all events, unfounded; for, even admitting that the original materials were as hard as they appear at present, we well know that rapid attrition will round the firmest substances in a short space of time. The waters of the deluge, from the single circumstance of overspreading the earth, must have abounded with currents, whose swift violence is to us unknown, and perhaps scarcely conceivable. Such currents, and their attendant vortices, would grind the most solid stones against each other, and perhaps in a few weeks give them their present rounded appearance. An operation of this kind, by means of a mill, takes place in the manufacturing of our common stone marbles used by school boys. Nature also carries on the same operation wherever rapid currents are met with. The cataracts and slighter water falls of our rivers furnish sufficient proof of my position. In those places the visitant will often observe numerous deep holes formed in the solid rock, like the hollow part of a mortar; each of these contains a few rounded pebbles, which have produced the excavations, and at the same time worn themselves into their present smooth and

rounded state. Some accidental inequality of the rocky stratum had occasioned the deposition of casual stones in that place; a rapid overflow of the current produced a vortex which, in a short time, wore the stones and the solid rock into their present form. Numerous appearances of this kind are found at the falls of Schuylkill, near Philadelphia, where the stratum of gneiss is, in many places, excavated in the manner mentioned.

I must, however, return to the eastern borders of the valley of the Mississippi. Some of the chains of mountains on the western side of the Allegany are equal, if not superior, in height to the parent or great dividing ridge. The Cumberland and Iron mountains extend from Virginia to the south, and their northern branches and spurs form an almost impenetrable barrier between that state and the cultivated parts of Kentucky. Our most daring huntsmen can scarcely penetrate to the head waters of the Kentucky and Cumberland rivers in any direct course, although some of the vallies have of late years been partially settled by our woodsmen, who, winding along the water courses, have found an abundant pasture for their cattle and been induced, from the profitable increase of numerous herds, to make this wilderness their solitary and scattered residence. I have occasionally visited some of the outer ranges of these almost impenetrable mountains. The magnificent and picturesque scenery which they display is beyond my powers of description. Winding along the narrow and deep vallies, your way is often impeded by immense masses of rock, which, having detached themselves from the hills, are sunk into the alluvial soil, and present the appearance of large barns, hay ricks, and every fantastic form which fancy, at a distant view, can imagine. The hill sides of these vallies are not less interesting: they, at intervals, present a perpendicular, walled, and often projecting front, which seems to impede further progress; they again recede in amphitheatrical form, and their towering summits become relieved by a bright shade of light, which, through a gradual slope, descends to the valley. In other parts different appearances take place. You see deep cavernous recesses in the rock, which retrocede one above another, affording flat ledges and loose soil, where the hemlock foliates and casts its dark shadow on the circumjacent parts. The summits of these hills are in open day and often present to the distant view appearances of ancient castles and fortresses. You

in one part see a continued wall as if protecting an ancient city, behind which isolated rocks form its apparent domes and towers: again you behold castle-like fabrics impending on the brink of an abyss, and can fancy that their ruthless warder inhabitants may impede your journey by unjust imprisonment and demand of you ransom for liberty, as in ancient times. Many of these scenes are superior to the Alps or Appennines in wild and picturesque beauty. I have only, as a geologist, to add that these various forms and fantastic shapes are discovered in hills of secondary formation. The outer boundaries of these extended ranges of mountains present a still more interesting object to the geologist. He is surprised with the sight of perfectly conical hills in a secondary country, and, without actual observation, would at once pronounce them, from their regular shape, of volcanic origin. These hills or mountains are generally isolated, though, in some instances, they indistinctly join the other ranges. They are perfectly conical, and composed of horizontal strata of sand stone, containing numerous organic remains, with casual beds of flint and chalcedonic fragments, also abounding with petrifactions.

The lower part of these hills is without any appearance of debris, their telus or slope not being formed of fragments washed from the superior height. On the contrary the lower strata are uniformly horizontal, being composed of flœtz beds of as regular Neptunian origin as any other part of the country.

I must leave to those of my brother geologists, who are fond of theorising, the explanation of this curious phenomenon, and humbly confess my inability to elucidate a subject which does not seem to accord with any system from the days of Burnet to the present time. C.

[Since the commencement of this interesting essay has been in type, an event, awful and unexpected, has deprived us of the farther labours of our valued and much lamented correspondent. In the midst of his usefulness his career is ended, and he has suddenly been transferred from the contracted field of investigation on earth, to nobler and more expanded scenes of speculation and of knowledge. In a subsequent part of the present number we shall notice more particularly the character of our departed friend, to whose valuable communications the readers of the Western Review have been hitherto so highly indebted.]

REVIEW.

A NOTICE of the following work, with extracts from it: "*A New General Atlas, consisting of a series of geographical designs, on various projections, exhibiting the form and component parts of the globe; and a collection of maps and charts delineating the natural and political divisions of the empires, kingdoms, and states of the world, constructed from the best systematic works, and the most authentic voyages and travels, with a memoir of the progress of geography, a summary of physical geography, and a consulting index to facilitate the finding out of places.* Edinburgh, printed by George Ramsay and company, for John Thompson and Company, Edinburgh; Baldwin, Cradock, and Joy, London; 1817."

THIS title, full, specific, and promising as it is, leads not the reader to expect more than he finds in the work. It is the best general atlas that we have seen. It is well planned, and is executed with great elegance. The size is the largest folio, and the volume contains seventy four projections, maps, and charts. A sheet faces the title page, giving a very interesting delineation of all the considerable mountains of the world, with a variety of valuable information upon each margin. Of this delineation we shall say more before we close our review. The table of contents includes 1, a memoir of the progress of geography; 2, a summary of physical geography; 3, the arrangement of maps according to the consulting index; 4, the consulting index for finding out places; and 5, the maps from one to seventy four.

A memoir of the progress of geography.

We have been much gratified with the perusal of this part of the work. It is compiled with intelligence and candor, and furnishes a good outline of the history of this science. A few valuable reflections of a philosophical and moral nature are interwoven with its details. Examples of this kind are the following.

"A superstitious notion, masked under the garb of piety, but without the pretensions or semblance of reason, excited a regard to the heavenly bodies. Its industry was rewarded by successive discoveries of their arrangement, their periods, and their relations, which entitle human genius and sagacity to the highest eulogium. Common necessities on the other hand, ambition and the love of change, have established an intercourse between the remotest members of our species,

which has already materially modified their general condition, and which, by gradually enlarging the sphere of our knowledge and operations, holds out the promise of still greater benefits. In the *origin* therefore, as well as in the *progress* of astronomy and geography, two remarkable peculiarities of our nature appear to be recognized, *the conviction of our dependence on some power greater than our own, and a feeling or sentiment of relationship to those intelligent beings, with which the earth is peopled*."

"The Sacred Scriptures point out an eastern country as the primitive habitation of man. Its situation is somewhat minutely described in the second chapter of Genesis. His continuance in its happiness was of short duration. One consequence of moral delinquency was the necessity of cultivating a less propitious soil: *but this labor, which was entailed on his posterity, eventually proved a source of knowledge and power. So true it is, that man is indebted to his physical wants for some of his chief advantages, and that in the very degradation, to which he was thus exclusively subjected, his Maker appointed the means by which he should become the master of the world.*"

Some of the most striking features of this memoir, we will now suggest in a very brief abstract.

The dispersion, which followed the building of the tower of Babel, was favorable to the advancement of geographical knowledge. It is "highly probable, if not certain, that the posterity of Japheth, the eldest of Noah's sons, peopled Europe and that part of Asia which lies north of Taurus; that the descendants of Ham may be traced among the Egyptians, the original inhabitants of Palestine, the Ethiopians, and Arabians; and that the children of Shem occupied some of the fertile regions of the east." Precedency in the arts and sciences is granted in general to Egypt, although some of the Eastern nations are allowed to contend for equal antiquity, and for priority in a few departments of invention and improvement. Till astronomy was considerably advanced, geography must have been limited to "a few empirical remarks," and a few rude delineations for the assistance of adventurers. So many drawings in a crude state have been found in savage nations by the first discoverers, and the propensity to this mode of communicating our conceptions is so natural to man, that it is absurd to attribute the invention of maps exclusively to any individual, or to any country. The Phenicians were a commercial nation in the days of Abraham. By their navigation important additions were made to the knowledge of ge-

ography. It is unquestionable that they visited most of the sea-ports in the Mediterranean; that they established harbors in the Red Sea, which had probably been abandoned by the Egyptians; and that they were in the habit of passing the strait which divides Africa from Europe, and of frequenting several places in both countries. The Phenicians are even supposed to have discovered the British Isles, when they were in pursuit of *tin*, and the name Britain is considered as of Phenician origin, signifying the *land of tin.* Obscurity prevents us from believing or rejecting fully the accounts concerning the expedition fitted out by Himilco, or "the circumnavigation of the continent of Africa by a Phenician fleet fitted out by Necho, king of Egypt, the Pharaoh Necho of the Scripture, and the monarch who is reported to have consumed 120,000 men in an attempt to unite the Nile with the Red Sea." The Hebrews contributed little to the extension of the science of geography. The Chaldeans, in the latter period of their history, did something for this science, but much more for astronomy. The Arabians and Chinese deserve more credit. The latter particularly had the use of a kind of *mariner's compass*, and must have been employed a good deal in navigation. In this, and in geography, the Greeks, however much we may admire the productions of their literary genius, have a claim to little praise. In their early history they were pirates, and thought more of plunder than of extending the bounds of useful knowledge. The Argonautic expedition, although it showed the utility of united strength and council, was of no great direct advantage. More good was done by the romantic visit which Theseus made to Crete. Commerce was not attempted in earnest till after the Trojan war. Homer's knowledge of geography was probably obtained from Phenician traders, who frequented the Greek islands. The attainments of Thales in geometry and astronomy deserve high encomium, but neither he, nor his disciple Anaximander, can claim the honor of inventing maps, except in common with a multitude of others. "Anaximenes, Anaxogoras, Archelaus, and Parmenides, cultivated the physical sciences, and long maintained the reputation of the Ionian School, but not without the opposition of many of their contemporaries, *who regarded their labors as subversive of the religion of their country.* A similar prejudice, *which has been common enough in every age*, forced Pythagoras to abandon Samos. He sought an asylum in Italy, where he estab-

lished a school, that long adorned the ancient world. The fate of Anaxagoras, who was persecuted for his opinions, probably cautioned this illustrious man against publicly declaring his philosophy, and induced him to practise a mysterious reserve, even among his disciples." He gave many correct notions concerning the planetary system, and did considerable for geography. The conquests of Alexander however did far more. The city, which he established with his own name at the mouth of the Nile, was of great service in this respect. "According to Pliny, surveys of Alexander's marches were taken by Bæton and Diognetus, and a copy of them given by his treasurer to Patroclus the geographer, by whom Eratosthenes was furnished with the chief materials employed in his map of the eastern world." Rome did little at first for this science, but her conquests, and the facilities for general intercourse among nations which were attendant upon the universality of her power, extended this knowledge far. "According to Strabo, the trade to the Malabar coast, which was the most important ever carried on by the Romans, occupied one hundred and twenty vessels annually.

The discoveries of the ancients were made by land chiefly, and must of course have been limited. Geography could not be carried to perfection without the mariner's compass. Although this was known to the Chinese, in some form, yet it was different from the European, and seems never to have been employed by them as it has been in modern times. The acquaintance with the globe among the ancients, "in the time of Ptolemy, did not amount to a third part of what is possessed by the moderns. Besides being entirely ignorant of the size and form of the large open oceans, of the arctic and antarctic regions, of the Australian isles and seas, and of the whole continent of America, we may confidently affirm that they had but very imperfect conceptions, if any, of a large portion of Europe, as Scandinavia, Russia, Prussia, and Poland; that their acquaintance with Asia did not extend to the vast regions beyond the Ganges, or comprehend much of what is called Great Tartary; and that though they had penetrated somewhat into Africa, they were nevertheless extremely uninformed as to the sea-coasts and dimensions of that continent." The learning of Constantinople embraced geography. Charlemagne promised more than was performed, in this respect, during his reign. The dark ages followed him. The crusades were advantageous to commerce, and of course to geography.

Some of the fantastic notions about the world ought to be mentioned. An early Arabic delineation gives it the form of a *heart*. A map of the eighth century makes it *an oval hemisphere*, surrounded by the sea. One map puts Jerusalem in the centre of the world, and represents Scotland as an island.

The Portuguese are first among the moderns for a liberal and extensive use of the magnetic needle at sea. They discovered the island of Madeira in 1420, and the Cape Verd isles in 1446. Vasco de Gama reached the Cape of Good Hope in 1497, and went as far east as the Malabar coast. The close of this century gave us **THE NEW WORLD**, and made **COLUMBUS** the **PRINCE OF DISCOVERERS**.

Between 1600 and 1700, the Dutch, the English, and the French made many discoveries. Hudson, Behring, Dampier, Anson, Cook, Vancouver, La Perouse, D' Entrecasteaux, Bougainville, and many others will be always remembered for their services to geography.

Among the modern travellers, who have extended our knowledge of this science may be mentioned "Niebuhr, Pallas, and Clarke, connected with contributions to Asiatic geography; Bruce, Browne, Horneman, Park, and Salt, as explorers of some of the African regions; and Hearne, Mackenzie, Lewis, Clarke, and Humboldt, to whom we are indebted for much information respecting the vast countries of North and South America."

Some of the most distinguished modern writers on geography are Munster, Ortelius, and Mercator, of the sixteenth century; Ferrari, Cluvier, Bochart, Cellarius, and Varenius, of the seventeenth; De Lisle, Condamine, Maupertius, Clairault, D' Anville, Busching, Ebeling, Malte-Brun, Pinkerton, and Playfair, of the eighteenth. "In the maps and charts of Arrowsmith, certainly the greatest repository of the actual geography of his time, we have the product of as much good sense and diligent inquiry, as were ever employed in the cultivation of a practical science."

A Summary of Physical Geography.

This part of the work is introduced in the following manner.

"The science of geography is divisible into various branches. Its most general, and perhaps most appropriate distribution, is into *mathematical*, *physical*, and *political*. The first of these treats of the astronomical relations of the earth considered as a

planetary body, specifies the means of ascertaining the latitudes and longitudes of places, and describes the modes of constructing maps, globes, and other instruments used in the practical parts of the science. To the second belongs the investigation of the constitution, dimensions, figures, positions, distributions, and productions of the component parts of the earth considered as an object of natural history. And the last, which comprehends *historical geography*, relates to the boundaries, divisions, population, institutions, establishments, revenues, and resources of the different states and empires throughout the world, and of course, in some degree, details their origin, progress, revolutions, decline, and fall."

"Physical geography necessarily embraces the elementary principles, at least, of several of the arts and sciences, as agriculture, botany, chemistry, geology, medicine, zoology, and is consequently of vast extent and importance. All that is here intended is a series or enumeration of the results of experiment and observation, serving as a sort of outline to the more remarkable appearances and phenomena of the planet we inhabit, and calculated, not to satisfy, but to excite curiosity on the subject."

The figure of our atmosphere is believed to be, like that of the earth, an oblate spheroid. Were it of the same density throughout, and had it no elasticity, its height would be, as ascertained by the barometer, *five miles and a quarter*. But it is an elastic substance and varies indefinitely in its density. At the height of *twenty eight miles* it is *two hundred and fifty six times* as rare as at the surface of the earth. "At the height of five hundred miles, a single cubic inch of such air as we breathe, would fill a sphere equal in diameter to the orbit of Saturn."

The weight of the atmosphere is thought to be 14 or 15 pounds on every square inch of the surface of the globe. The whole weight is believed to be equal to that of a globe of lead 60 miles in diameter. At the height of two miles, clouds are scarcely supported. At the height of 50 miles little or no effect is produced on the rays of light, whose motion is 200,000 miles a second. The mean temperature of the atmosphere is 48° of Fahrenheit. The medium quantity of water in it is about one seventieth part. Sound goes about 13 miles in a minute. A wind hardly perceptible moves about one mile in an hour, while a hurricane, that tears up trees, and carries buildings before it, moves 100 miles an hour. "The remarkable effects of some particular winds are, in a great degree, to be attributed to the na-

ture of the gas with which they are unusually loaded. Thus the *Samoum* or *Samiel* of Arabia is said to carry much nitrous gas, the *Harmattan* of Guinea much oxygen, and the *Chamsin* of Egypt much azote." Hurricanes have probably an electric origin. Clouds are not often suspended more than a mile above the surface of the earth. Their most common color is brown, red, yellow, grey, or white, of all shades. "A *green* cloud is a highly beautiful, but very rare occurrence. The blue color of the sky is to be imputed to the vapours invisibly mixed with air, having the property of reflecting the blue ray of light more copiously than any other." Dew both ascends and descends. The mean annual quantity of rain for Great Britain has been estimated at 32 1 2 inches in depth. That, which falls upon the whole globe, is 34. "The *Mirage*, or *Fata Morgana*, is a peculiar optical illusion, by which objects are presented in places where they do not really exist. Thus the coast of Calais has been seen as if actually approaching the opposite shore of England. Vessels have appeared in the clouds, and the images of palaces and other buildings have been represented confusedly huddled together on the surface of the sea. The French Academicians, on their visit to South America, witnessed a remarkable phenomenon from an elevated mountain in Quito. This was their own figures reflected in a very fine mist, and surrounded with many concentric circles, exhibiting the colors of the rainbow. To this appearance the name of the *apotheosis* of travellers has been given. What has been called the *Spectre of Brocken* is a similar occurrence."

The ocean occupies two thirds of the whole globe. The mean depth has been computed at only one fourth of a mile, but the data are insufficient. The water of high latitudes is heavier than that of lower, because it is colder. The surface of the sea is generally less salt than the bottom. The color is the product of animal and vegetable substances which float on the surface of the water. "To the same causes, more especially to the phosphorescent quality possessed by the former, and also owing to its being a good conductor of electricity, may be ascribed several kinds of *luminous appearance* which have been noticed in different countries, and have often exercised the ingenuity of the observers."

In regard to waves, "it rarely happens that the wind penetrates further than *six feet* below the surface of the water."

Wave is added to wave to make those which are mountain-high. The Malstraem or Maelstroom, on the coast of Norway, is produced by cross currents.

These are some of the most remarkable features of the Summary. Valuable observations are made in it upon geology, which is hardly yet a science; upon the vegetables and animals of our globe; and upon the varieties of MAN. "The numbers of mankind have been variously rated. The result of as much accurate inquiry as the subject admits, determines the full amount at about 700 millions. Of this Asia, including the eastern and South Sea isles, may contain 400 millions, Europe 180, Africa 80, and America 40."

A table of the lengths of the principal rivers throughout the world follows the Summary of Physical Geography. The following estimates are from this table.

	miles.
Amazon, (Worcester has it 3,500,) -	3,100
Volga, - - - - -	2,600
Ob, or Obi, in Russia, (Worc: 1,900,) -	2,300
Mississippi, (Worc: 3,000, or Missouri 4,491)	2,000
Nile, - - - -	2,000
Hoang-ho, Yellow River, in China, -	2,000
Rio de la Plata, - - - -	1,900
Ganges, (Worcester, 1,500,) - -	1,400
Danube, (Worcester, 1,620,) - -	1,300
Orinoco, (Worcester, 1,500,) - -	1,380
Euphrates, (Worcester, 1,500,) - -	1,200

According to the Atlas, the Amazon is the largest river in the world, but according to the Gazetteer of J, E, Worcester, (which is an excellent work,) the Missouri is, by far, the largest.

Proportional lengths of rivers according to Major Rennell.

European Rivers.

Thames,	1.
Rhine,	5 1-4.
Danube,	7.
Volga,	9 1-2.

Asiatic Rivers.

Indus,	6 1-2.
Euphrates,	8 1-2.
Ganges,	9 1-2.
Burrampooter,	9 1-2.
Ava River,	9 1-2.

Jenicei,	10.
Obi,	10 1-2.
Amour,	11
Lena,	11 1-2.
Hoang-ho,	13 1-2.
Kian Ku,	15 1-2.
African River.	
Nile,	12 1-2.
American Rivers.	
Mississippi,	8.
Amazon,	15 3-4.

According to Worcester, the Missouri, allowing Thames to be unit, should be more than 20.

We have next in the Atlas a table of the snow line, or lower limit of perpetual congelation, at different latitudes from Humboldt. At the equator, on Chimborazo, this line is at the height of 2,450 toises, or 15,730 feet. In north latitude 20°, in South America, this line is at the height of 2,350 toises, or about 15,035 feet. It is 1400 toises, or 8958 feet, on Mount Blanc, in north latitude 46°. Perpetual snow in Sweden is found, in latitude 62°, at 800 toises, or 5118 feet, and in Norway, in latitude 65°, at 700 toises, or 4476 feet. In this table of the snow line, it is stated, that the French toise is to the English fathom as 1,065777 to 1, or as 1065 to 1000, that is as 213 to 200, or 16 to 15 nearly.

The Consulting Index in this Atlas is an excellent part of the work, and is of the greatest convenience and use to the possessor.

We shall now lay before our readers the information concerning the principal mountains of the world, contained in the margin of the map, on which they are delineated, and of which we have already made mention. We have been accustomed to think that South America has the highest land in the world, and are not a little surprised to find that the loftiest mountain in the United States may be placed upon the top of CHIMBORAZO, and yet the altitude of both not be equal to that of the DHAWALAGERI in Asia. Chimborazo, according to Worcester's Gazetteer, is 20,892 feet high. The same work says that the altitude of Mount Washington in New-Hampshire, the highest point in the United States, is 6,634 feet. The sum of these two is 27526. The height of the Dhawalageri is 27,677 feet, leaving a deficiency of 151 feet in the joint altitude of Mount Washington and Chimborazo. Mount Washington has been recently meas-

ured by a company of scientific gentleman, and is found not to be as high as Worcester's statement. Chimborazo however is estimated upon the map of our atlas at 21,470 feet, considerably above the height given by Worcester, though not enough to make, with 6,200, the sum of 27,677.

The estimates of the Atlas.

	feet.
Dhawalageri in the Napaul,	27,677
Himalaya, or Himmaleh, Mountains between Hindostan and Thibet, supposed to be the *Emodus*, *Imaus*, or *Himaus*, of the ancients,	25,500 to 22,478
Chimborazo, highest of the Andes,	21,470
Highest flight of the Condor,	21,000
Cajambe, or Cayambe, Quito Andes,	19,480
Humboldt and Bonpland, June 23d 1802, ascended as high as	19,400
Antisana, volcano, Andes,	19,150
Volcano of Cotopaxi, Andes,	18,875
Highest limit of litchen plants,	18,225
Mount St. Elie,	18,090
Volcano of Popocatapetl, or great Volcano of Peubla, Mexico,	17,720
Cotocatche Mountain, Andes,	16,450
Tonguragua Volcano, Quito,	16.270
Lower limit of perpetual snow on the equator, South America,	15,730
Mont Blanc, Alps, highest in Europe,	15,665
Heights of Assuay, the ancient Peruvian road,	15,540
Ortler Spiltze, Tyrol,	15,430
Mount Cervin, Switzerland,	14,780
Mount Pelvoux, Head of Gironde B, France,	14,215
Mount Ophir, Sumatra,	13,842
Peak of Jungfrau, Switzerland,	13,735
Pambamarca, Andes,	13,500
Mount Oxon, Alps,	13,465
A farm house of Antisana, a hamlet, the highest inhabited spot on the globe,	13,435
Brœthorn, Switzerland,	12,815
Superior limit of pines in the torrid zone, S, A,	12,800
Sochonda Mountains, China,	12,800
Finisteraarhorn, Alps,	12,210
Lake of Toluca, Mexico,	12,195
Peak of Teneriffe, mean of the best observations, (Worcester gives 15,397 feet.)	12,176
Town of Micupampa, Peru,	11,670

Mulahacen Mountain, Spain,	11,670
Peak of Venlatta, Spain,	11,390
Mount Perdu, Pyrenees,	11,265
Highest limit of trees of South America,	11,125
Le Viguemal, Pyrenees,	11,010
Italitzkoi Mountains, Altaic Chain, Asia.	10,735
Superior Limit of oaks in the torrid zone, S, A,	10,500
Pic Blanc, Pyrenees,	10,205
Quito, South America,	9,630
Awatsha, or Awatska, or Avatcha, a volcano in Kamtchatka,	9,600
Mount Libanus, Turkey,	9,535
Real del Monte Mine, New Spain,	9,125
Volcano of Imbaburu, which frequently ejects fish, Quito,	8,960
Mount St. Gothard, Alps,	8,930
Peak of Lomnitz, Carpathian Mountains,	8,640
Mount Valina, highest of the Appenines,	8,300
Sneebutten, Norway, a mountain,	8,295
Blue Mountains, North Peak, Jamaica,	8,180
Convent on Mount St. Bernard, Switzerland,	8,040
Perpetual snow in Switzerland above the altitude of	8,000
Volcano in the Isle of Bourbon,	7,680
Town of Mexico,	7,525
Peak of Montaigu, Pyrenees,	7,310
Convent of St. Gothard, Alps,	6,810
Mount Cenis, Alps,	6,780
Mount Olympus, Turkey,	6,500
Stoney Mountains, North America,	6,250
Mount d'Or, France,	6,190
Rœttruck, Sweden,	6,000
Inferior limit of pines in the torrid zone, S, A,	5,685
Mount Reculet, Switzerland,	5,590
Puy de Dome, France,	5,225
La Souffriere, volcano of Gaudaloupe,	5,110
Heckla, Iceland,	5,010
Mount Ida, Turkey,	4,960
Snoe Fiall, or Snoefiiel, Iceland,	4,560
Ben Nevis, Scotland, highest in Great Britain,	4,370
Town of Briancon, France,	4,270
Ben Lawers, Scotland,	4,015
Mount Vesuvius, Italy, (Ætna, 10,963, Worcester,)	3,935
Palace of St Ildefonso, Spain,	3,790
Ben Wyvis, Scotland,	3,720
Snowdon, highest mountain in Wales,	3,517

Town of Caraccas,	3.490
Greatest altitude, in which Palms and Bananas grow, western hemisphere,	3,280
Ben Lomond, Scotland,	3,250
Sca Fell, Cumberland, highest mountain in England,	3,166
Skiddaw, Cumberland,	3,022
Cader Idris, Wales,	2,914
Magerton, Ireland,	2,700
Cheviot Hills, Northumberland,	2,658
Plinlimmon, Wales,	2,463
Whernside, Yorkshire,	2,384
Town of Madrid, Spain,	2,276
Snea Fell, Isle of Man,	2.004
Black Comb, Cumberland,	1,919
Cawsand beacon, Devonshire,	1,792
Gibraltar, Spain,	1,440
Ailsa Craig, Scotland,	1,200
Lake of Constance, Switzerland	1,162
Arthur's Seat, Scotland,	800
Holy Head Mountain, Anglesea,	709
Pyramids in Egypt,	500
Greenwich Observatory,	214
Paris, France,	115
London, at St Paul's,	65

The chief difference from these estimates in Worcester's Gazetteer of 1817, are the following.

Himmaleh Mountains from 25,669 to	15,733
Chimborazo, already mentioned,	20,892
Peake of Teneriffe, already mentioned,	15,397
Finisteraarhorn,	14,116
Mount St Bernard, highest summit,	11,011
Mount Cenis,	9,958
Mount St Gothard,	9,075
Mount d'Or,	6,707

In addition to this account, Worcester gives the following heights of other mountains.

Mount St Elias, } western part of North	12,672
Fair weather Mountain, } America.	8,970

The mountains of the United States are low. Mount Washington, the highest, has been already stated at 6.634
Moosehill, in New Hampshire, is 4,500
Round top in New York, 3,804
Highest of the Allegany south of New York, about 3,000

The highest mountain in France, Loncira, is	14,451
The highest in Spain, Sierra Nevada,	12,762
Highest summit of Sierra de Estrella, Portugal between	5,000 & 6,000
Mountains of Geesh estimated at	15,000
Compass mountain at the Cape of Good Hope,	10,000

Geography is a very interesting study, and we regret the want of good maps in the United States for the more advantageous pursuit of this kind of knowledge. We have good maps of many of the states separately, but no good atlas of the whole, and none at so moderate a price as to bring it within the reach of the poor student. This evil ought to be remedied by our booksellers.

We have not attempted to make a formal review of the Atlas, which is the subject of this article. Our object has been merely to notice it, and to call the subject to the attention of our readers, in the first place, and in the second, to extract from it some of its most interesting statements and estimates. These are much more valuable than our own remarks would be. We wish that our fellow citizens, and especially our professional men and students, would furnish themselves much more extensively with good maps than they generally possess at present.

SECOND ORIENTAL IDYL.

The Two Shepherds.

NAMES.

Sotam,	Wise friend.
Erlim,	Measure of love.
Dobed,	Good Shepherd.
Erda,	Gift of love.
Ilpha,	Fine eyes.

The bright father of light was setting, after a sultry summer day, behind *the hill of the grove*,

While Erlim and Dobed, the two happy shepherds of the shady vale, came towards *the hill of the grove.*

They had been contending all the day, who had the best wife, near *the hill of the grove.*

And at last had agreed to leave the decision to Sotam, the old man on *the hill of the the grove;*

Whom they found sitting under a lofty oak, before his fine cottage at *the hill of the grove.*

Erlim. Peace and happiness unto thy snowy head, worthy and wise old man:

May many healthy years smile on thee, and thy venerable old age.

We ask thy blessing, father of the hill. Wilt thou hear our strife and decide who is in the right?

Sotam. The blessing of the old man be with you. Speak unto him, he will listen to you.

If the wisdom of old age can decide between you, it shall not fail to send you away in peace.

Erlim. I have been loved by the best of women: I have been blest by the best of wives:

Yet Dobed will contend that his own is better than mine, and I am provoked because he will not acknowledge the truth.

My wife is Ilpha, who is as fair as the white lily and as straight as the reed:

Who has the brightest black eyes, shining like those of the antelope.

Her flowing hair is black, and similar to the silky fleece of the black mountain goat.

Her rosy lips are ever smiling, and she bears on her face the dimples of love.

Dobed. Open thy ears, Sotam, and listen to me a while. Thou shalt not mind Ilpha, when thou shalt know my Erda;

Who is the true gift of love, stately like an oak and straight like a palm.

Her eyes are blue like the skies, her hair is similar to pure gold.

Her cheeks are white as the milk, on which a rose has been dropt.

She has no dimples, nor need have any; her skin is as smooth as the velvet.

Erlim. My lovely Ilpha loves me as her soul; she has been mine three years, and is still as fond as the dove.

She is as mild as the lamb: when I speak she listens and obeys, without ever objecting

Her voice is sweet as the sound of the flute, and her words are always the best that are spoken.

When she stands she is as graceful as the white dove, and her steps are like those of the camel.

Dobed. But my dear Erda is the wife of my soul, her heart is quite mine, and mine is quite hers, forever.

She became mine four years ago, and we have not quarrelled even once.

Her voice is like the song of the Thrush, her words and behaviour are like those of a loving and dutiful wife.

She stands like a graceful pillar, and when she runs she is as swift as a mare.

Erlim. When I go in the morn to tend my flocks, my wife never fails to fill my basket.

And when I return, she hastens to give me the kiss of love, and I always find the evening meal on the table.

Dobed. But my Erda smiles as soon as she can perceive me, and runs to meet me on the lawn.

Every morn and eve she spreads the table for me, with milk and curds, cakes and nuts.

Erlim. Ilpha has already brought forth her fruit, and has given me a stout and healthy boy.

Dobed. But Erda has done more, and given me, besides my boy, a little girl as lovely as herself.

Sotam. Hold, good shepherds of the vale, do not contend any longer.

You are both truly blessed, and it would be hard to tell who has the best of wives.

Both are good, both are handsome, or at least you think so: and this proves that they are loving and beloved.

Open your hearts, shepherds, and believe the words of the old man, who dwells on the hill of the grove.

Each of you has the best for himself. Go to them and be happy.

CONSTANTINE.

COMMERCE AND MANUFACTURES.

In the early settlement of Kentucky the inhabitants were chiefly employed in defending themselves against the Indians, and in clearing the land, building dwellings, and making other preparations for the occupancy of the country. They were not possessed of the requisite implements, nor had they the time to use them in the manufacture of such articles as were necessary for clothing and furniture, except in a very rough manner. Some brought supplies of money with them on their removal from the older states, which

served as a resource in providing those things to which they had previously been accustomed, whilst others less opulent were constrained to submit to privations, and many respectable individuals furnished themselves with food and clothing from the flesh and skins of the buffaloe and deer with which the forests abounded. Within a few years, however, so soon as the fertile soil of the country was put into a state of cultivation, provisions became abundant, and the casualty of war produced a demand for the surplus beyond the consumption of the inhabitants. The necessary disbursements of the United States' government in purchasing supplies for the north western armies, operating against the savages on our frontier from 1790 until 1794, furnished a market for the produce of the country, and afforded the agriculturists the means of supplying themselves with foreign commodities. The occurrence, too, about the same period, of the French revolution, which ultimately involved all Europe in hostilities, withdrew the weight of male population from the pursuits of husbandry, and occasioned an increased demand for the provisions of America. The western country, having been theretofore recently indulged in an outlet by the opening of the navigation of the Mississippi, participated in this national prosperity. From these commercial advantages, united with a luxuriant soil, population and wealth flowed into the western country in an unexampled manner. Innumerable farms were opened, splendid towns were erected, and the people were enabled to draw from other countries whatever ministered to appetite or vanity. This was the condition of the west at the commencement of the late war between the United States and Great Britain, which was so distressing to the cities on the sea board depending on foreign trade, but which proved beneficial, in a pecuniary point of view, to this portion of the union. Large supplies for our northern armies were purchased west of the mountains, and multitudes of persons were employed in military service and liberally paid by the public. The immense sums of money, diffused by these means, gave an artificial value to property, which will long be sorely felt, and encouraged the formation of habits of expense and profusion which it will be difficult to correct.

The war with England had produced a temporary cessation of foreign trade. At its close the opinion prevailed that commerce would revive with augmented activity and splendour. No one perhaps was aware of the crisis or anticipa-

ted the consequences of the pacification of Europe, which have taken place; in fact for a short time we appeared to be realizing our golden dreams. Our commodities sold higher than at any former period. There were actually paid for tobacco in Virginia thirty dollars a hundred. But, so soon as the belligerent countries had recovered from the prostration consequent on the convulsive conflicts, which terminated with the sanguinary scenes of Waterloo, and had ceased to be overrun by wasting armies, society was tranquilized into the ordinary pursuits of civil life, agriculture received its due proportion of attention, lands were put into a proper state of cultivation, and, in a short time, their products were wafted across the Atlantic, so that we were actually undersold in our own markets. Since this time our merchants have been unable to make sale of those articles which once supported our commerce, and no reciprocity of trade can now exist between the new and the old world. The present generation however having grown up under the auspices of a prosperous commerce, and in the use of foreign luxuries, we still continued our purchases and have made payment in the metallic medium of the country. An unhappy expedient too, fallen upon about the close of the war, prevented the pernicious consequences of this unequal trade from being felt. The convenience of banking houses in the large cities in facilitating the operations of commerce, induced an exaggerated estimate of the advantages of such institutions. By an almost contemporaneous operation, therefore, throughout the union, innumerable banks were brought into existence, and the good faith, solvency, and correct dealing of the few previously incorporated, inspired general confidence in those newly formed, so that their paper was substituted for, and accepted as specie; and by throwing a larger amount of it into circulation than they held of specie in their vaults, an ar-artificial abundance of money was produced. During this time the precious metals were rapidly, though imperceptibly, passing out of the country. The paper substitute prevented the people from feeling the scarcity of real money until the notes of the banks were brought in by the dealers in foreign goods, and cash was demanded for them. This occasioned a curtailment of discounts, individual pressure, and ultimate failure of both private persons and banking corporations.

Under the united operation of these various causes, viz:

the discontinuance of foreign commerce, the calls of the banks, the withdrawal from circulation of the paper of such of them as were solvent, the losses by the holders of the notes of those which had become insolvent, the habits of extravagance which the people had formed and would not willingly restrain, and the consequent deportation of specie, Kentucky, in 1819, was left almost without a circulating medium; and perhaps the expedient, resorted to at an early day, of making property* a vehicle of internal commerce, would have been revived, had not the legislature adopted such measures last winter as enabled the Bank of Kentucky to increase its issues of notes, and made it the interest of creditors to receive them, thus producing a currency, that serves internal purposes, but is of little use in foreign commerce.

From this brief detail of facts, it seems that a succession of accidental circumstances have herctofore given commerce and wealth to the western country, which causes have now ceased to operate, and that others have combined to precipitate the people into a condition more disastrous than any in which a simple privation of trade would have left them, if no change in the circulating medium had ever occurred. Now, in order to form some idea of the course of future events, the condition of commerce prior to the French revolution should be recurred to. The quantity of the precious metals in circulation not having been increased in any considerable degree in the western portion of the world since that period,† we may justly infer that the price of labour and of articles of trade will again be nearly what they were at that time. The aged will be able to recollect the prices of flour, tobacco, and other important productions of the country, on which reliance is placed for the purchase of foreign supplies. The prices then were something like what they are quoted at in the prices current published in our maritime cities at this time. Those who do not duly consider the cause of the present depression of the markets, flatter themselves that it is a temporary evil; but, when they have reflected further, they will be induced to conclude that there will be but little advancement in prices un-

* From 1783 till 1788 in Kentucky cows and calves of different rates were a sort of money; for instance a first rate cow and calf were estimated at ten dollars, a second rate at seven dollars, and perhaps they answered as well as Lycurgus's iron money, at least they were as easily moved about.

† The product of the mines of Peru and Mexico have chiefly gone to the East Indies.

til famine or war shall enlarge the wants of the old world. As however a reliance on the occurrence of misfortunes to our transatlantic brethren is neither a philanthropic nor a politic dependence for a return of a beneficial foreign commerce, perhaps it would be as wise a course to endeavour to accommodate ourselves to the present state of things by the adoption of such measures as may enable the machine of society to move on without the happening of such an event. To this end I would suggest that the future expenditure of the state must be proportioned to the amount of its exports. In this particular nations resemble individuals. One, who would avoid embarrassment in his private concerns, must disburse less than he makes. This rule, if adhered to, will perhaps relieve against future difficulty but will not discharge previously existing debts. For the ways and means of paying these we will refer to the would-be-members of the legislature, and pass on to a further consideration of commerce.

The exports of the United States will not now average more than thirty three per cent of what they have done heretofore. It therefore follows that the importations should diminish in the same ratio; and the reduction in the use of such articles as are brought from foreign countries must be in like proportion, unless we can contrive to provide ourselves with them in our own country. Home supplies may be paid for in our paper medium, or obtained in barter for other commodities, and will not be limited in the consumption by a depression of outward trade. It becomes important therefore to enquire what goods can be fabricated at home so as to prove profitable to the manufacturer and beneficial to the community.

The chief articles heretofore imported are cloths made of wool, cotton goods of various kinds, linens, silks, cutlery, and other implements made of iron and steel, and porcelain and other ornamental earthen ware. But at the same time a portion of all these, except silks and fine pottery, is manufactured in the United States and some of them were made in this commonwealth. The cotton manufactories of the New-England States seem to succeed very well, and their goods have, in a great measure, superceded the coarser cottons which formerly came from Great Britain and the East Indies, and flattering hopes are entertained that it will not be long before they will be enabled to vie with British manufacturers in muslins and calicoes.

Throughout the whole interior of America the coarser woollen cloths, linens, and heavy iron utensils are made for common use. But few successful attempts, if any, have been made in manufacturing silk goods or ornamental pottery. On the other hand, some other articles of great and constant use are almost exclusively supplied by our own mechanics. Our hats, shoes, and saddles, are perhaps all made in the United States; and of late manufactories of glass in all its varieties, from the ornamental table furniture to window lights, have been established at Pittsburgh, which have not only superceded the use of foreign glass, but have furnished it of a quality not inferior in beauty, richness, and excellence of workmanship. Besides these, innumerable other articles are made on this side of the Atlantic. Among them is the whole apparatus of war, powder and arms; and of these our countrymen excel, not only in the use, but in the fabrication. The American rifles are admitted to be superior to the guns of Europe. Our artizans furnish, also, a large proportion of the gold, silver, and plated ware, consumed in the country, and nearly all the leather and paper for every purpose whatever.

From this enumeration it would seem that little remains to be brought from abroad, yet when the custom house books are examined it will be found that a prodigious amount of foreign goods annually come in. Immediately after the close of the late war, the amount was so great that the duty to the government alone exceeded thirty millions in one year, and the amount of annual importations has exceeded one hundred millions.

Of the amount so imported the articles consist chiefly of woollen cloths, cotton goods, linens, silks, hardware, and pottery. Of these, some are articles of indispensable necessity, but the use of some of the others may in a great measure be laid aside. There are no substitutes for cutlery or woollen goods, but the silks and fine muslins can give place to American cottons. In relation to those for which we have a substitute, we have to teach ourselves to submit to the change; and as to those which cannot be dispensed with, if we are unable to purchase them, it becomes a highly important duty to try whether we cannot make them for ourselves. In doing so we are released from the embarrassing difficulty of a medium of payment. Commerce is the exchange of labour; heretofore the citizens of the United

States bartered their labour, in the shape of flour, beef, pork, and tobacco, with the Europeans for theirs, in the form of manufactured goods. They no longer desire to keep up this exchange, as they do not want the provisions of America. We must endeavour therefore to find others that are willing to barter in this way. If we can prevail on our own citizens to lay out their labour in the same mode and exchange it for provisions, it may even answer a better purpose than continuing the old barter with Europe, because the expense of transporting the commodities will be saved. Thus it becomes an object of national, as well as of individual policy, to invite and encourage attempts at the fabrication of those articles, which are considered of the first necessity, but the use of which must now be limited, unless they can be made in our country.

First then, the prices in this country of fine pottery, commonly called queensware, china, &c. are three fold greater than the original cost at the potteries in Europe and China. This arises from the freight, risk in transportation, duties, and profit reserved by the several dealers through whose hands the goods pass, for we know that labour is not in that proportion dearer here than in Europe. Why may not these things be manufactured here? Why at least has not the effort been made? It is not for lack of ingenuity, as we see that, in the kindred article of glass, our American workmen have already rivalled the foreign artificers. Nor can it be believed that it is for want of proper earth; this article is found of the kind adapted to the purpose in most of the states of the old world, whence it is fairly inferable, that, if diligent search were made, it would also be found here. Geologists and chemists are multiplying, and doubtless it will occur to them that, by trying the various earths which may come under their observation, and pointing out those adapted to pottery, they will render an essential service to their country, and thereby furnish additional evidence of the practical usefulness of their scientific labours. It is perhaps accidental that there are no manufacturers of ornamental earthenware in America. The small amount consumed in proportion to other goods, the vicinity of the settled part of our country to the sea board until within the last thirty or forty years and the consequent cheapness of freight, and the moderate duty in years past, may all have had their influence in deterring individual attempts. But in all these particulars the state of things is materially changed. The

consumption is extended; a large portion of our country is far distant from the ocean; the risk and expense of transportation are increased; the imports are augmented, and a depreciated medium offers an ample bounty for the encouragement of efforts at the manufacture of this article. But would it not be politic for the legislatures of the several states, and for the general government, to offer premiums for the discovery of suitable clay and the best specimens of pottery? The crowned heads of Europe afford examples of this kind of encouragement worthy of imitation, Even the warrior, Frederic of Prussia, was not so entirely engrossed by his schemes of conquest as to prevent his finding leisure to consider the importance of this species of manufacturing and actually sparing from his darling pursuit considerable sums for the establishment of factories of porcelain.

If an estimate were made of the amount of specie which annually goes to purchase earthen ware, it would present a serious inducement to act on the subject. I will make a loose conjecture. Suppose each retail merchant vends 300 dollars worth per annum, and that there are one thousand retailers in the western country: it follows then that 300000 dollars yearly are expended for this purpose alone; of which no more than one third is the original price of the commodity: the residue pays for the transportation.

Another class of articles, which must be had, are such as are chiefly produced from iron and steel, embracing all sorts of edged tools for mechanics and for domestic purposes, locks, hinges, &c. Many articles in this line are already made in America. But still a large number are imported. Cannot all be advantageously manufactured at places enjoying the advantages of iron ore and coal, such as Pittsburgh; more particularly at the present time when the increased duties and the want of a metallic medium enable the artist to be so well paid for his labour? This species of manufacture is not similarly situated with pottery. The materials are known and abundant, workmen are not scarce, the business has commenced, and those engaged in it have only to persevere. Possibly government might devise some beneficial stimulants, such as allowing bounties on the best specimens or greatest quantities of particular classes of articles.

A third manufacture, of very extensive consumption in the United States, is woollen cloth, for which there is no substitute that will be acceptable to the people; nor can

they altogether dispense with the old fashioned practice of wearing coats. If what I have endeavoured to prove be admitted, viz: that our exports will not at this time purchase more than one third of our usual supplies of foreign manufactures, it seems to follow that we should, by a fair ratio, only purchase one third of our usual number of coats; but as this may be a little inconvenient, perhaps it would be as well to devise some means by which we can diminish the amount of imports and still be clad as heretofore. In order to do this we shall be compelled to restrain ourselves in some other less necessary indulgence, and to make up the deficit of clothing by employing our own countrymen to supply us, who can take in exchange those provisions which the foreign manufacturers will not accept. Could we do this and thus stop the importation of woollen goods altogether, there would be saved to the nation a greater sum per annum than perhaps the whole revenue of the general government. This will become obvious to those who reflect that each male individual pays annually double as much for woollen clothing as he pays in taxes to government. And the merchant will readily admit the truth of the assertion when he casts up his invoices and perceives that his purchases of cloths, blankets, &c. exceed the proportion of seventeen and one half pe cent (the average of the former tariff established by law) of the amount of all his foreign goods. If such be the fact, it becomes an object of national concern to enquire how far it may be practicable to accomplish the object. This course of reflection has induced me to make some inquiries on the subject, in relation to the expense and other matters connected with the manufacturing. I learn that the average price for the last half century of fine Spanish wool, of which superfine cloths are made in England, has been, with little variation, seven shillings and three pence sterling per pound—equal to one dollar and sixty two cents—that something less than two pounds of this wool makes a yard of superfine broad cloth —and that these cloths sell in England from twenty to thirty shillings sterling per yard, varying according to the colour and finishing, the blues being from twenty five to thirty shillings, and others from twenty to twenty-five shillings per yard. But a second quality of cloths, nearly equal to the best yet made in the United States, sells from eighteen to twenty shillings. To exhibit then the cost of manufactu-

ring a yard of cloth, and the price of the wool separately, the account will stand thus:

Two pounds of wool at 7*s* 3*d* - - -	14 6.
Manufacturing best superfine blue, - -	15 6.
	£1 10 0.

Equal to six dollars and two thirds for the first quality of superfine blue.

The calculation of a yard of second cloth worth 18*s* will stand thus:—

Two pounds of wool not of the best quality, estimated at 6*s* sterling per lb.	12
Manufacturing - - - -	6
	s 18——$4

Taking four dollars as the average cost of such cloths as the best we are in the habit of making in this country, and adding thereto the necessary charges until it reaches the consumer on this side of the mountains, the estimate will stand thus:—

Original price, - - - -	$ 4 00
Four per cent. English duty, - -	16
Storage, package, drayage, porterage, -	10
Freight and insurance, - - -	16
American duty, - - - -	1 00
Profit of wholesale merchant at Philadelphia,	50
Carriage to Kentucky, - - -	16
Retailer's profit in Kentucky, at 25 per cent.	1 50
12 per cent. for difference of exchange,	62
	$ 8 20.

Then the price which the merchant here must charge the wearer for the yard of cloth is about eight dollars, and the prices charged in fact are from eight to ten dollars for second cloths, whilst thirteen dollars per yard are demanded for superfine cloths.

Now let us see what cloth of the second quality can be made for here. From two manufacturers, actually engaged in the business at this time, I obtain the following as their charges. The one of them receives wool, assorts, spins, and weaves it, &c. and delivers the cloth from the loom. The other receives the cloth in that condition, and dies, fulls, and finishes it.

Two pounds of merino wool can now be had for less

than 75 cents per pound,	-	-	-	$1 50
Picking, assorting, and scouring 2lb wool,			16	
Oil - - - - - -			6	
Carding two pounds of wool,		10	20	
Sclubbing two	do -	5	10	
Spinning two	do	25	50	
Weaving two	do	40	80	
Sizing, quilling, &c.			16	
				1 98
Fulling, dying, and spinning, from 80 to 100 cts.				1 00
				$4 48

Thus we see that the very best quality of cloth, which our manufacturers are capable of making, can be sold here for less than five dollars per yard. What motive have we, then, to persist in the purchase of foreign broad cloth? It is said that domestic cloth is inferior in colouring and finishing. Admit this to be true, that our diers are not yet equally skilled with those across the Atlantic: can they not learn? Other arts have been speedily acquired by our citizens, and, in many instances, they have excelled their European teachers: in constructing ships,steam engines, mills, and many other less important kinds of machinery and arts. Why then should we despair in this instance? But the truth is, some of the clothiers of the United States do colour and finish in a very handsome manner. The writer of this article has seen some beautiful pieces from the factory of the late colonel Humphreys and S. Daws, in Rhode Island, and from a factory at Steubenville, particularly one piece of black from Daws's, not surpassed by any superfine cloth from Europe.

To account for the languishing state of our cloth factories requires a recurrence to a few facts, which will be within the recollection of most persons. During the late war, the occlusion of our ports caused premature attempts at manufacturing. The consequence of this was, the price of merino sheep, wool, and labour became high, and the great demand for cloth brought it to market in rather an imperfect state, and at extravagantly high prices. At the close of the war the British cloths, superior in beauty and finishing, were immediately thrown into the American market, so as to produce a glut and consequently forced sales at reduced prices, which necessarily prevented sales by the American manufacturers, by which means many of them

failed. Since that time circumstances have changed. The markets are no longer overloaded, the duties are increased, and other contingencies render it indispensably necessary that foreign goods should be sold higher now than heretofore. The price of wool too has fallen in this country, and it may be assumed as a tenable position, that wool will continue lower here than in England, simply because the rent of land is lower here than there. Indeed the fee simple of sheep-grazing land here is, and will continue to be for years lower than the annual rent paid there.

Under these impressions it appears obvious that cloth manufacturing must be a beneficial investment of money. If fine broad cloths can be made and offered at five dollars per yard they cannot fail to be sold; and we have ascertaind that they can be made and sold for that price and yield a profit. It is possible indeed to fail of success, as has happened heretofore, by a prodigal waste of money in buildings and extravagant wages to workmen, and neglect of business. But if the ordinary industry and economy, exercised by mechanics in the management of their business, be practised by those who embark in this business, they must succeed.

I would enquire of persons who have surplus capital, what they can do with it? Is it prudent to vest it in what is commonly termed merchandize, in the purchase and sale of foreign goods? That business is on the decline, and must continue so. The habits of the people may induce them to purchase European finery so long as a dollar can be raised to pay for it; but ultimately that trade must settle down to a condition, commensurate with the exports of the country; and a period of decreasing circulating medium is unfavourable to the retailer, as he must necessarily have his capital distributed in many hands, and be unable to draw it back readily, from the inability of his customers to make payment.

The prospects from agriculture are not much more flattering, there being no probability of a demand for produce. Nor is it a time to lend money on interest, because borrowers have few means of using it beneficially, and therefore may not be able to repay it. There remains then no way to employ money that promises equal profit with manufacturing, particularly fine cloths; because, under no circumstances that are likely to occur, can the competition of the European factories be injurious. The low price of merino

wool will give to the manufacturer here such a decided advantage, that he can not only engross the sales of the United States, but participate in the foreign markets.

I will conclude this article by subjoining that, supposing there is no immediate prospect of improvement in the prices of the productions of the country, it will be necessary not only for the government to afford encouragement to enterprising efforts for the establishment and perfection of manufactories and the promotion of internal commerce, but, as there is a diminution of about one half of the whole rent roll of all the lands of America, it follows, as a necessary consequence, that each house keeper must reduce his expenses in the same proportion, if his income in any way depends on the issues of the soil: and, to bring about this retrenchment, the beginning should be, where commencement is made in pulling down a house, at the top. The ornamental articles should be laid aside, and we should then come down in regular gradation until none other than essentials remain, and, in obtaining them, entire dependence should not be placed on public factories: each family should manufacture for itself as far as practicable. But, as many cannot do this to any considerable extent, nor can the better quality of goods be produced in this way by reason of want of skill and proper machinery, the innumerable vacant houses in our towns must be filled by mechanics and manufacturers, who can devote their attention exclusively to these objects. When this shall happen the country will become more really independent than at present, and the hard times, which we now deplore, will prove a blessing. H.

Since the preceding article was handed to the editor and put in type, the writer examined some broad cloths offered for sale by Mr. Hugh Foster, merchant tailor in Lexington, manufactured by the Harmony Society in the state of Indiana. These cloths well deserve the name of superfine. They are beautifully coloured blues and blacks, and finished in a manner not inferior to the foreign cloths. The manufacturers deliver them in Lexington at six dollars and fifty cents per yard.

Since delivering the manuscript for publication the writer has also been furnished with the following estimates on the manufacturing and importing of cloths, and on the charges attending the setting of the business of manufac-

turing in operation, which were made by a gentleman, formerly engaged in one of the Atlantic cities in importing British goods, and latterly in rearing merino sheep and manufacturing woollens in the neighbourhood of Lexington, Kentucky. Considering these calculations valuable, they are given to the public. The reader will perceive, on examination, that the difference in cost of the yard of cloth when it reaches the wearer in Kentucky, as shewn by the preceding and subsequent calculations, arises from the difference in the original costs, one being fine and the other superfine.

An account of charges attending the manufacture, in England, and importation to Kentucky, of one yard of English superfine broad cloth; shewing, though imperfectly, the manner in which the items, constituting its whole value, are eventually distributed.

A superfine English broad cloth, such as is sold in Kentucky for about twelve dollars a yard, costs, at the manufactories in England, about 28*s* sterling; which sum of course pays for the raw materials, as well as for the labour of the different artificers employed upon it; and also reimburses them (in the proportion which one yard of cloth bears to their whole business) for the great variety of taxes to which they are subjected.

A celebrated manufacturer in the west of England offered in 1816 to manufacture American wool into cloths at 7*s* 6*d* sterling for black and 10*s* sterling for blue. Hence it is concluded that the manfacturer pays, directly or indirectly, to the grower of the wool used for one yard of cloth worth 28*s* sterling, about 16*s* sterling.

The farmer, who receives this 16*s*, though he pays no excise upon his wool, (in England,) yet, by taxes upon his estate and effects, tithes, poor rates, &c. is obliged to surrender at least half the amount of his sales, or 8*s* out of the 16*s*; that is, if the wool be English; if it be Spanish, the tax of that government is direct and still heavier.

The manufacturer and his workmen are also compelled to contribute to the support of the state, the church, and the poor, to an amount probably of not less than ten per cent. on the sales, or 2*s* 9½*d* on 28*s*.

From these premises we may infer that

The wool grower gets clear for the wool, (2lbs,)	$ 1 78
And to pay his taxes, - -	1 78
	3 56

Brought over,	$ 3 56
The manufacturer gets for his nett profit and for his hands, - - - -	2 05
For his and their taxes, - -	62
	$ 6 23
The next items in course are charges for tillets, rugs, ropes, bales, packing, and carriage to the port of shipment, altogether about 5 pr. ct.	31
British woollens pay an export duty of 4 per ct.	25
The freight, and charges for shipping and landing, may be estimated at 2 per cent. -	12
The insurance at 3 per cent. - - -	19
The duty charged by the United States, 20 per ct. ad valorem, or 27½ on the cost, and with the custom house fees about 28 per cent. -	1 74
Actual cost at the American sea port,	$ 8 84
The importing merchant's profit, in addition to the 5 per cent allowed by the manufacturer, for measure on broad cloths, 10 per cent.	88
Advance charged by the western retailing merchant for carriage, loss in exchange, and profit at less than the difference of exchange, or 25 per cent advance, - - -	2 28
	$ 12 00*

From the foregoing estimate it appears that

The real cost of the yard of cloth is -	$ 3 83
The taxes, eventually paid by the consumer to the British government, amount to - -	2 65
The duties, eventually paid by the consumer to the United States, amount to - -	1 74
The expenses of transportation, adding the probable amount of carriage from Philadelphia to the items noted above, - -	1 00
The profits of different merchants &c. - -	2 78
	$ 12 00

British taxes	$2 65
American	1 74
Both	$ 4 39

*The exchange on Philadelphia is now 15 per cent. higher than when the estimate was made out, so that the same cloth must now be sold at 13 dollars 80 cents or 40 dollars in Kentucky notes.

An account of an experiment in the manufacture of a piece of superfine cloth.

The wool was raised by the proprietor, and its value then and now quite uncertain.

Paid for sorting and selecting about 40 lbs wool,	4½			$1 80
for scouring and picking the same, reduced by washing to	26lbs,		8	2 08
for carding -	24 12-16,	-	15	3 71
for slubing and spinning	42 2-12,	-	15	6 30
for Oil -	3lbs,	-	10	30
for weaving -	43½ yds.	-	33	14 35
for burling	"	-	3	1 31
for colouring black and dressing	35 yds.		50	17 50
				$ 47 35

Twenty six pounds of clean wool made 43½ yards of cloth from the loom, which shrunk by dressing to 35 yards; which cost $47 35cts for the piece, or $1 35 10-35cts a yard exclusive of the wool, the cloth being 5-4 wide in loom and 3-4 wide finished.* Several of the charges for manufacturing this cloth were extravagant; at fair rates they would have amounted to about 100 cents a yard.

An experiment in coarse wool made into Sattinets.

Washing and picking	240¼ lbs. (clean)		8 cts.	19 22
Colouring black	37	-	12½	4 62½
" blue	27 6-16		15	4 10¾
Carding and spinning	78	77½ yarn	20½	15 88¾
	84		18	15 12
	54¼	54 1-8	20½	11 07
	24½	23	18	4 14
				74 17
100 dozen	800 cotton warp		36½ cts	36 50
133⅓ "	900 " "	"		48 72
				85 22
				$ 159 39
Fulling, dressing, and colouring part,	264 yd.		20c	50 85
	47		"	12 68
Weaving - - - -	418		21	87 78
				$ 310 70

*The cloth is a handsome superfine black, a sample of which is left with the editor.

Sold 40¼ yds.	from the loom	undressed,	6*s*	40	25	
53½	" "	"	"	53	25	
25	" "	"	"	25		
122¾	" "	dressed	9*s*	183	56	
62¾	" "	"	"	94	12	
18	" "	"	12*s*	36		
96¾	on hand or sold		9*s*	145	12	
				$ 577	30	
				310	70	
Realized for 240¼ lbs. of coarse wool,				$266	60	

An estimate of the cost of the machinery for a manufactory of woollens, upon a scale as small as can be, and work to the best advantage.

1.	One Carding Engine, - - -	500
2.	One Jack Billy of sixty spindles, - -	150
3.	Two Jenneys, sixty " each at $150	300
4.	Six narrow Looms, with geers, &c. complete, 35	210
4.	Two broad do " " " 50	100
5.	One Warping Mill, - - -	20
6.	Four Quill wheels, - - 2 50	10
7.	Bags, Baskets, Tubs, &c, - - -	20
8.	One Fulling Mill, - - -	75
9.	Two clothiers' presses complete, - -	175
10.	Shearing Machines and Shears, - -	200
11.	Kettles, Vats, and sundry small tools for clothier,	150
12.	Drying Frames and Scaffolds, - - -	50
13.	Head-wheel, Cog-wheel, and Wallowers,	200
14.	Four blind Horses, - $10 - -	40
	Contingencies, - perhaps, -	100
		$2300

Buildings.—The Carding Engine and Billies (1 and 2) must be in the same room, and will require one story of a building about 25 by 30.

The Jenneys (3) may be put in the second story of the same building.

The Looms, &c. (4, 5, and 6,) will require one large room, or one story building about 20 by 40, or any house room equivalent, to be built or rented, as it is not needful that they should be in contact with the other machinery. One building of two low stories, about 25 by 40 or 50, would hold the carding and spinning apparatus and the looms.

The fulling, dying, and drying, (8, 9, 10, 11,) will require two rooms about 20 feet square, and the fulling mill must be in contact with the tread-wheel &c. and consequently near the first mentioned building.

There must be a shed over the tread-wheel, &c. (13.)

A small store and counting room will, also, be necessary.

The cost of these buildings will depend on the place where, and the materials of which, they are built.

Hands necessary to keep the foregoing machinery in full operation and an estimate of their wages per week.

One carder and spinner on a billy or sluber,	$6	6
Two spinners on Jenneys, &c. - -	6	12
Seven weavers, men and women, average	6	42
One dier and clothier, - - -		10
Two boys to assist the carder and dier, &c.	2	4
Two women to scour and pick wool, &c.	2½	5
Eight children to pick wool, wind quills, &c.	1	8
The keeping of four horses, - - -	1	4
Contingencies, as wood, &c. - - - -		10
		$ 101

A great saving of wages may be effected in time by instructing and employing blacks to spin and weave.

Materials, and estimate of their cost per week.

Wool 180lb clean, equal to 300lb in fleece,	60c	180
Oil, - - - - - -		2 50
Dye stuffs, very uncertain, say - - -		15
Fuller's articles, as soap, &c. - - -		5
Cotton warp for sattinetts, 50 dozen, -	30c	15
		$ 217 50

Wages per week, as above,	101
Materials, - -	217 50

Expenses per week, $ 318 50, and per year $ 16,562.

Capital necessary to carry on the business with facility, supposing a portion of the materials to be obtained in barter for goods and on credit.

Buildings should not exceed - - -	$ 1000
Machinery, per estimate - - -	2300
Materials and wages for four months,	5520
	$ 8820

Estimate of the goods, which might be made at the factory before described, supposing the best wool that can be obtained were used exclusively, and as good cloths were made as the materials and skill of the hands will admit.

The wool must be stapled or sorted into different quantities, and will, with the same labour, produce cloths of different degrees of fineness, about as follows; varying, however, the kinds of goods, as the fashions may change and the demand require.

20lbs would make	35 yds	sat.	worth	1 25,	43 75	cost'g 64c(a)
20 "	35	do		1 50,	52 50	70½
20 "	35	do		1 75,	61 25	93
40 "	50	kerseymere,		2 50,	125	1 32½
40 "	50	do		3,	150	1 54
20 "	10	broad cloth,		7,	70	3 71
20 "	10	do		10,	100	5 30
180	225 yds (b)				$ 602 50	
But the above prices may be reduced by discounts, commissions, and bad debts, perhaps 20 per cent.					120 50	
Nett value of goods made per week,					$ 482 00 (c)	
Or $25,064 a year						
At an expense of 16,562 as before,						
Leaving $8,502 for profit.						

(a) At these prices the goods amount to $318 62 1-2 cts, or a weeks expenses.

(b) 225 yards equal to 250 single width.

(b) Wages for a week's work $101 on 250 yds. is 40 2-5 cts per yard.

Dying and fulling materials for	do	" 15	" "
		55 2-5	
Wool 1 1-5 lbs. in fleeces, 60 cts,		72	
		137 2-5	
Wear and tear of machinery, &c. $2300 a year, at 1-2 per cent a week,		4 3-5	
		$ 1 32 4-5	

(c) 250 yards for $482, is about $1 93cts per yard, which is, therefore the average cost of single width goods.

FISHES OF THE RIVER OHIO.

BY C. S. RAFINESQUE,

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(CONTINUED FROM PAGE 243.)

52d Species. BLACKHEADED FAT-HEAD. *Pimephales promelas.* Pimephale tete-noire.

Diameter one fourth of the length, body olivaceous silvery, head blackish, snout truncated, and with soft warts: fins whitish, dorsal with a large irregular black spot at the anterior base, with eight forked rays, and one simple shorter obtuse hard: anal with eight rays; lateral line flexuose and raised at the base, tail lunulate.

A small fish three inches long. It is rare and hardly known by the anglers. I describe it from a specimen taken with a hook baited with earth-worm, by Mr. William M. Clifford, in a pond near Lexington, in the month of April 1820, and now preserved in the Museum in Lexington. Its head is very remarkable, soft and fat all over, the snout sloping, broad, truncate with soft warts in front, mouth at its inferior extremity very small, elliptical transversal, with equal circular hard lips. The whole head and even the eyes are of dusky and bluish black colour. Pectoral fins trapezoidal with 15 rays, the upper rays of the colour of the head. Tail olivaceous lunulated, with 20 forked rays and 5 short simple rays on each side of the base. Abdominal fins quadrangular. The first ray of the dorsal is singular, thick, short, hard, and yet blunt, almost cartilaginous, or not properly spinous, and not at all serrate as in the Carps. Scales pretty large.

XX GENUS. SUCKER. CATOSTOMUS. Catostome.

Body oblong cylindrical scaly. Vent posterior or nearer to the tail. Head and opercules scaleless and smooth. Mouth beneath the snout, with fleshy, thick, or lobed sucking lips. Jaws toothless and retractible. Throat with pectinated teeth. Nostrils double. Gill-cover double or triple. Three branchial rays to the gill membrane. A single dorsal fin commonly opposite to the abdominal fins, which have from eight to ten rays.

Lesueur has established this genus, in the first volume of the Journal of the Academy of Natural Sciences of Philadelphia, with all the American species of the genus *Cyprinus* which have the above characters, and he has described eighteen species belonging to it. I have discovered twelve additional new species in the waters of the Ohio, where about sixteen new species have already been detected. This genus having become so extensive at an early period, and many other species existing probably in North America and Siberia, I have therefore divided it into five subgenera, employing principally the number of abdominal rays. All these fishes are permanent in the Ohio its branches and the ponds. Some however disappear in winter, retreating into deep water or into the mud. Many bite at the hook. They feed on univalve shells, small fishes and spawn. They offer a tolerable food.

1st. Subgenus. MOXOSTOMA.

Body oblong, compressed; head compressed, eight abdominal rays, dorsal fin commonly longitudinal, tail commonly unequally forked.

53d Species. OHIO CARP SUCKER. *Catostomus anisurus.* Catostome anisure.

Diameter one fifth of the length: silvery, slightly fulvescent above, fins red, the dorsal olivaceous falcated with 17 rays, nearer to the head and reaching the vent: lateral line curved upwards and flexuose at the base: snout gibbose: tail forked, upper part longer. Anal fin falcate with eight rays.

A large species common all over the Ohio and the large streams, as far as Pittsburgh. Permanent and sometimes taken in winter. It is called Carp every where. Length from one to three feet. It is taken with the hook, seine, and dart. Its flesh is pretty good, but soft. The male fish has a red tail; while it is olivaceous in the female. Snout divided from the head by a transverse hollow which makes it gibbose. Eyes black, iris silvery and golden above. Sides often with copper shades. Scales large with concentric stria. Pectoral fins large oval acute with 15 rays and reaching the abdominal fins. Caudal with 24 rays.

54th Species Buffalo Carp Sucker. *Cotostomus anisopturus.* Catostome anisopture.

Diameter one fourth of the total length: silvery: head sloping, lateral line curved as the back: tail unequally bifid, upper part much longer: dorsal fin longitudinal, beginning above the pectorals and reaching the end of the anal, sinuated by a double falcation, first ray very long.

A singular species which I have never seen. I describe it from a drawing of Mr. Audubon. It is found in the lower part of the Ohio, and is called Buffalo Carp, Buffalo perch, Buffalo Sucker, White Buffalo-fish, &c. Length about one foot. Very good to eat. Taken with the seine in the spring only. Body broad, dorsal fin broad and large, remarkable by its shape like a double sickle, and first ray which reaches the tail. Anal fin small and falcate. Pectoral fins reaching the abdominal fins. The number of abdominal rays was not observed, if it should have nine it would be nearer to *C. Velifer* and *C. setosus*, or it may form a peculiar subgenus.

The *C. tuberculatus* of Lesueur belongs also to this subgenus, having eight abdominal rays; but its tail is regularly bifid.

2d Subgenus. Ictiorus.

Body nearly cylindrical. Dorsal fin elongated, abdominal fins with nine rays, tail bilobed, commonly equal.

The *C. gibbosus* and *C. Communis*, of Lesueur, appear to be intermediate between this subgenus and the foregoing, having nine abdominal rays, but an unequal bilobed tail.

55th Species. Brown Buffalo-fish *Catostomus bubalus.* Catostome bubale.

Diameter one fifth of the total length; olivaceous brown, pale beneath, fins blackish, pectoral fins brown and short: head sloping, snout rounded, cheeks whitish: lateral line straight, dorsal fin narrow with 28 equal rays, anal trapezoidal with 12 rays.

One of the finest fishes of the Ohio, common also in the Mississippi, Missouri, and their tributary streams. It is called every where Buffalo-fish, and Pironeau, by the French settlers of Louisiana. I had called it *Amblodon bubalus* in my 70 N. G. of American Animals, having been misled by the common mistake which ascribed to it the teeth of the *Amblodon grunni-*

ens; but it is a real *Catostomus*, without any such teeth. Length from two to three feet; some have been taken weighing thirty pounds and upwards. It is commonly taken with the dart at night when asleep, or in the seine; it does not readily bite at the hook. It feeds on smaller fishes and shells, and often goes in shoals. It retires into deep water in the winter, yet is sometimes taken even then. It comes as far as Pittsburgh. Its flesh is pretty good but soft. Scales rather large. Tail with 24 rays and two equal rounded lobes. Iris gilt brown, eyes small. Pectoral fins with 16 rays. Dorsal fins shallow and even beginning just before the abdominal fins, and ending at the base of the anal fin.

56th Species. Black Buffalo-fish. *Catostomus niger.* Catostome noir.

Entirely black, lateral line straight.

I have not seen this fish. Mr. Audubon describes it as a peculiar species, found in the Mississippi and the lower part of the Ohio, being entirely similar to the common Buffalo-fish, but larger, weighing sometimes upwards of fifty pounds, and living in separate shoals.

3d Subgenus. Carpiodes.

Body oblong, somewhat compressed; head compressed, nine abdominal rays, dorsal fin commonly elongate, tail equally forked.

The *C. cyprinus* and *C. setosus*, of Lesueur, belong to this Subgenus.

57th Species. Olive Carp Sucker. *Catostomus carpio.* Catostome carpe.

Diameter one fourth of the length: olivaceous above, pale beneath, chin white, abdomen bluish: lateral line straight, dorsal fin somewhat falcated with 36 rays, anal trapezoidal with 10 rays; head sloping, snout rounded.

Seen at the falls of the Ohio, commonly called Carp. Length from one to two feet. Eyes very small and black, fins olivaceous brown, the pectorals olivaceous, trapezoidal short and with 16 rays. Tail with 24. Dorsal fin beginning before the abdominal and reaching the end of the anal fin. Not so good to eat as the Buffalo-fish.

58th Species. SAILING SUCKER. *Catostomus velifer*. Catostome volant.

Diameter less than one fourth of the length: body elliptical, silvery with green shades, lateral line flexuose, dorsal fin very broad falcated with 25 rays, the first ones very long, anal fin trapezoidal lunulate with 10 rays: head sloping, snout rounded.

Catostomous anonymous Lesueur in Journ. Ac. Nat. Sc. of Philadelphia, Vol. 1, page 110.

A singular fish, not very common, yet found as far as Pittsburgh. It has received the vulgar names of Sailor fish, Flying fish, and Skimback, because, when it swims, its large dorsal fin appears like a sail, and it often jumps or flies over the water for a short distance. Length commonly from twelve to sixteen inches, of which the tail, which is very large, includes one fourth, and has 24 rays. Back slightly olivaceous, scales very large. Fins olivaceous brown except the abdominal and pectoral, which are white. The dorsal beginning before the abdominal and reaching the end of the anal, the second and third rays are one third of the whole body, the first is short and cleaving to the second; mouth small, quite terminal at the lower end of the rounded snout; head small, convex above. Pectoral fins with 16 rays. Not very good to eat. Seen only in summer.

59th Species. MUD SUCKER. *Catostomus xanthopus*. Catostome xanthope.

Diameter one fourth of the length: lateral line straight: silvery, back olivaceous, head brown above, snout gibbose rounded: dorsal fin hardly falcate with 14 rays, anal lanceolate with 8 rays: lower fins yellowish.

Found below the falls. Length from six to ten inches. It lives in muddy banks, and conceals itself in the mud. Flesh very soft. Head large, flattened above, mouth large, eyes large. Iris silvery. Lateral line hardly raised at the base. Dorsal fin above the abdominal, fins olivaceous as well as the tail, which has 20 rays. Pectorals with 18 rays. Scales large.

4th Subgenus. TERETULUS.

Body elongate cylindrical or somewhat quadrangular, nine abdominal rays, dorsal fins commonly small, tail equally forked.

An extensive Subgenus to which belong all the following

species of Lesueur: *C. aureolus, C. macrolepidotus, C. longirostrum, C. nigricans, C. vittatus, C. maculosus, C. Sucetta,* besides the *C. teres* and *C. oblongus* of Mitchell.

60th Species. Black-face Sucker. *Cotostomus melanopsis.* Catostome melanopse.

Diameter one seventh of the length: head squared, blackish above, snout convex obtuse; back olivaceous, sides whitish with scattered black dots, a black spot on the gill cover, and a large one between the dorsal and caudal fins: lateral line straight, dorsal fin with 14 rays, anal with 9 rays.

A singular species seen at the falls. It is rare and called Spotted Sucker or Black Sucker. Length from four to six inches; body cylindrical, flattened beneath as far as the vent. Head flat above, blackish there and in the fore part. Mouth almost terminal with thick whitish lips, the lower one shorter and thicker, a few small black spots on the sides of the head and a large one on the preopercule. Gill cover silvery. Eyes black, iris brown with a gold ring. Back of a rufescent colour with gold shades. A very large black patch above the anal fin before the tail. Sides pale with small unequal black dots, belly whitish. Fins coppery, the pectoral elliptical elongated with 18 rays, the anal elongated reaching the tail, the dorsal broad and opposed to the abdominal. Tail with 20 rays. Scales rather large nervose radiated.

61st Species. Black-back Sucker. *Catostomus melanotus.* Catostome melanote.

Diameter one sixth of the length: bluish black above, whitish beneath; head convex, snout obtuse: lateral line straight: dorsal and anal fins with nine rays.

Seen only once at the falls. Length six inches, body nearly cylindrical. Mouth rather inferior, lips thick and somewhat gristly. Iris silvery. Scales pretty large. Fins whitish, the dorsal and caudal a little redish. Pectoral fins elliptical with 16 rays. Tail 20. Dorsal fin trapezoidal, opposed to the abdominal, the first ray shorter. Anal elliptical obtuse. Vulgar names Black Sucker and Blue Sucker.

62d Species. Rough-head Sucker. *Catostomus fasciolaris.* Catostomus fascie.

Diameter one sixth of the length: brown above, white be-

neath, sides with small transversal black lines: head sloping, tuberculated above, snout obtuse: dorsal fin longitudinal reaching the end of the anal fin, lateral line straight.

I have not seen this species, but describe it from a drawing of Mr. Audubon. It is found in the lower part of the Ohio. Vulgar names Rough-head Sucker, Pike Sucker, Striped Sucker. Length about eight inches, body cylindrical tapering behind.

Eyes small, mouth beneath.Lower fins trapezoidal, about twenty transversal lines. A doubtful species, perhaps an Hydrargyrus, but the mouth is like that of the Sucker.

63d Species, RED-TAIL SUCKER. *Catostomus erythrurus.* Catostome rougequeue.

Diameter one fifth of the length: rufous brown above, white beneath; tail olivaceous: head convex, snout rounded: lateral line straight: dorsal fin trapezoidal redish with 12 rays. anal fin elongated yellow, anal falcated, with 7 rays.

A fine species, not uncommon in the Ohio, Kentucky, Cumberland, Tennessee, &c. Vulgar names Red-horse, Red-tail, Horse-fish, Horse Sucker, &c. Length about one foot. Scales very large. Mouth beneath. Iris whitish, eyes black. Pectora fins yellow elliptical reaching the abdominals and with 16 rays. Tail large with 20 rays. Its flesh is dry and not very good to eat.

64th Species. KENTUCKY SUCKER. *Catostomus flexuosus.* Catostome flexueux.

Diameter one fifth of the length: silvery, back brownish, scales rather rough, opercule flexuose: head squared, snout gibbose truncate; lips very thick, the inferior bilobed: lateral line flexuose: tail brown: dorsal fin blackish with 12 rays, anal fin whitish with 7 rays and reaching the tail.

The most common species in Kentucky, in all the streams and ponds, called merely Sucker. Very good to eat. It conceals itself in the mud in winter. It bites at the hook, living on minnies and little lobsters. Body thick cylindrical. From ten to twelve inches long. Head large, a deep depresion between the snout and the head, mouth large with fleshy lips. Eyes large black, iris yellow. Opercule hard bony. Lower fins whitish, pectorals elongated elliptical with 20 rays. Tail 20

rays. Dorsal trapezoidal sloping behind. This fish is the most useful to keep in ponds.

65th Species. Big-mouth Sucker. *Catostomus? megastomus.* Catostome megastome.

Diameter one fifth of the length: blackish above, yellowish beneath, very broad: a spine at the base of the pectoral fins: lateral line straight.

A very doubtful species seen by Mr. Audubon. It comes sometimes in shoals in March, and soon disappears. Only taken with the seine, not biting at the hook; vulgar name Brown Sucker. The mouth is very remarkable, being broader than the head, somewhat projecting on the sides. Length one foot. The head resembles that of Cat-fish, but has no barbs. Is it a peculiar genus owing to the mouth and pectoral spine? It might be called *Eurystomus.* The yellow colour covers the forehead and reaches to the anal fin. Dorsal opposed to the abdominal and trapezoidal, pectorals elliptical yellow.

5th Subgenus. Decactylus.

Body nearly cylindrical, abdominal fins with 10 rays: tail equally forked.

Besides the two following species, the *C. bostoniensis* and *C. hudsonius*, must be enumerated here.

66th. Species. Pittsburgh Sucker. *Catostomus duquesni.* Catostome duquesne.

Diameter one fifth of the length, whitish; lateral line curved towards the back: anal fin with nine rays extending to the tail: dorsal with 14 rays and trapezoidal.

C. duquesni Lesueur J. Ac. Nat. Sc. v. 1, p. 105.

This species has been pretty well described by Lesueur: see his description. Length from 15 to 20 inches: good to eat, found in the Ohio as far as Pittsburgh: vulgar name White Sucker.

67th Species. Long Sucker. *Catostomus elongatas.* Catostomus allonge.

Diameter one seventh of the length; brownish; lateral line nearly straight: snout and opercules tuberculated: dorsal fin with 32 rays, long, falciform and raised anteriorly. Ana fin small with 8 rays.

C elongatus Lesueur J. Ac. Nat. Sc. v. 1, page 103.

It is found in the Ohio as far as Pittsburgh, and called Brown Sucker. length from 20 to 25 inches. Head small cuneiform above: Scales large. Good to eat. See Mr. Lesueur's description.

(TO BE CONTINUED.)

BATTLE WITH THE INDIANS.

Mr. HUNT,

I happened not long since to fall in company with Mr. David Cook of Lincoln county, a gentleman of respectability and unimpeached veracity, than whom perhaps we cannot boast of a more expert, active, intrepid, or successful warrior, among the early defenders of our soil. Feeling a disposition to promote as far as I am able your design of perpetuating those incidents in our history which are threatened with oblivion, I have procured from him the following narrative. Although, comparatively speaking, this rencounter can excite but little interest in those, who have been dazzled by the pomp and pageantry of royal conflicts, yet to the philosophic mind, that is accustomed to view things in their final results, it cannot fail to be in the highest degree agreeable, to contemplate our own country, which, in the language of Livy, "ab exiguis profecto initiis, eo creverit, ut jam magnitudine laborat sua."

In March 1782 fifteen men were ordered by colonel Logan to march from Lincoln county to join captain James Estill, at Estill's station, near the present site of Richmond, Kentucky, and thence to march, under his command, as a kind of reconnoitering party to different parts of that section of the country, at the discretion of the captain. They accordingly marched, in company with as many as could be spared from the station, amounting altogether to the number of forty, to the Kentucky river a few miles below the mouth of Station Camp Creek. Here they commenced digging a canal for the purpose of enabling the company to pass and repass the river with facility and even expedition, should any exigency require it. A day or two after they had left the station, a body of Indians arrived there, killed a daughter of captain Innes in sight of the fortification, and committed some other depredations. As soon as this news

reached Estill's company five of those who had families within the fort, being unwilling to trust them to the care of the few who remained, returned themselves to the fort. The company next morning crossed the river and took the direction in which they expected the Indians had retreated. After having gone about ten or twelve miles they fell into the track, or, as they termed it, the *trail* of the Indians, pursued them as expeditiously as possible the remainder of the day, and encamped the ensuing night near the Little Mountain, the present site of Mount Sterling. Early next morning they again took up the line of march, leaving behind ten of their men, whose horses were so fatigued that they were unable to proceed. The company, now reduced to the number of twenty-five, had not gone far before they discovered, by the appearance of the track of the Indians, that they were not very distant. They then marched in four lines until about an hour before sunset, when they discovered six of the enemy helping themselves to rations from the body of a buffalo. The company were immediately ordered to dismount. Captain Estill fired his piece with effect, and the Indians fled. Mr. Cook, our narrator, naturally ardent and exceedingly active, had proceeded some distance before the company, and, seeing an Indian halt, raised his gun and fired; at the same moment a second Indian passed on the opposite side and he levelled them both at one shot. This fact is well attested, and, being in view of nearly the whole company, inspired them with a high degree of ardour and confidence. In the mean time the main body of the enemy had heard the alarm and returned, and a general engagement commenced at this moment. Lieutenant William Miller, who commanded the left line, took a panic and precipitately fled from the contest, and his division, consisting of six men, through courtesy followed him without firing a gun. This flank immediately became unprotected, and the enemy made an effort to gain their rear. As soon as captain Estill discovered this he ordered Cook, who was an ensign, with three other men to occupy Miller's ground and repel the enemy in that quarter. He accordingly took the lead and the others followed, one of whom discovered an Indian and shot him, when the three retreated to a little eminence whence they thought they could do greater execution with less danger, but the ensign, intent only upon one object, continued to advance, not discovering the absence of his comrades, until he had discharged his gun

with effect, when he immediately retreated, but after having run some distance towards a large tree, near which he intended to shelter himself, he unfortunately got entangled in the tops of some fallen trees, which circumstance occasioned him to halt for a moment, and a ball struck him just below his shoulder blade and came out near his collar bone. In the mean time the captain and the rest of the company kept up a tremendous fire. The gallant captain Estill expired with his fourth wound. Second lieutenant Samuel South experienced the same fate, after perhaps one of the most sanguinary and bloody conflicts ever fought in Kentucky for the number of men engaged, which continued for the space of one hour and three quarters. Both parties then seemed disposed to withdraw and the contest subsided by mutual consent. Of Estill's company there were eight killed and three wounded, and Mrs. Gatliffe, a woman who was then a prisoner with the Indians, and also a negro who was that day recaptured by the whites, stated that the Indians were twenty-five in number, seventeen of whom were killed and two wounded. This battle was fought on the same day with the defeat at the Blue Licks. F F.

OBITUARY.

In our number for April, it was our melancholy office to record the loss we had sustained in the death of one of our valued co-adjutors: we are now again called to perform a similar duty. On the eighth day of May 1820 departed this life, Mr. John D. Clifford, in the 42d year of his age. This enterprising, intelligent, and useful man was an ornament to our town and one of its most valuable inhabitants. He was at once a man of business and a student, a citizen of the world and a christian. Having been to a considerable extent successful in his mercantile pursuits, he was the friend and the patron of the industrious young man, the public spirited promoter of every useful enterprise, the liberal contributor to every charitable object. His mind too was stored with valuable learning. Natural science was his favourite pursuit,and he was ardently devoted to the investigation of the curiosities which abound in our country. To his pen are our readers indebted for the interesting articles on Indian Antiquities, which have from time to time

appeared in our pages, and by him was commenced a series of essays, the first of which is contained in this number, on the GEOLOGY OF THE WESTERN COUNTRY. His career has been suddenly stopped; in the midst of his usefulness he has been cut off; and we are left to lament his loss. He was an ardent friend, an estimable companion, an affectionate relative, an industrious merchant, a public spirited citizen, an instructive writer, and a sincere christian. The death of such a man is no trifling calamity: it is a loss to our whole community; it leaves a melancholy blank in our literary circle; and seriously affects the interests of the church. One after another in rapid succession, our fellow labourers in the extensive field of literature and science are thus taken away, but we trust those of us who remain will be thereby excited to greater exertion, and as our responsibilities are increased, our vigilance and zeal will be proportionably enhanced. E.

MONTHLY RESULTS
OF METEOROLOGICAL OBSERVATIONS,
Made in Lexington by Professor Rafinesque.

No. 4. RESULTS FOR APRIL, 1820.

Temperature. The lowest was 15 degrees on the 3d, the highest 85 on the 20th: medium 50 degrees. The greatest variation in one day was 30 degrees, from 35 to 65 on the 10th. The beginning of the month was cold, with snow and frost; but the latter part was warm and agreeable.

Atmosphere. There have been nineteen fair days, besides several partially so, five cloudy days, one hazy day, four rainy days, and one snowy day.

Rain. It rained heavily on the 16th, wind W. and on the 17th, wind S. which raised the streams and the Kentucky. It rained on the afternoon and evening of the 21st, wind N. E. On the 25th it rained in a gust, wind S. W.; and there was a small rain on the evening of the 1st, wind N. W. The average of water fallen must have been nearly three inches.

Snow. A fall of snow, two inches deep, happened on the 3d, wind N. E.

Frost. There were four frosty nights, the 1st, 2d, 3d, and 4th. On the third there was no thaw in the shade during the whole day. White frosts happened on the 5th, 8th, 9th, and 10th. Vegetation was retarded and injured by the heavy frost of the 3d, and the blossoms of the Cherry trees, Peach trees, and Pear trees, which had put forth, were mostly killed.

Winds. Prevailing wind S. W., which blew twelve days. West seven days, N. W. four days, South four days, North and N. E. each one day and partially another. There was a high S. W. wind on the 11th.

Thunder was heard on the 11th, and lightnings were seen on the evening of the 14th. On the 25th a thunder gust happened from the S. W.

Ground. The snow melted on the third day after its fall. The roads were muddy for two or three days after, and also after the rains of the 16th and 17th; but they soon dried, and were generally good during the remainder.

Vegetation. 1st. *Acer saccharinum* and *Acer negundo* in blossom.

5th. In blossom *Sanguinaria canadensis*, *Jeffersonia binata*, *Erythronium albidum*, *Alsine media*, *Viola cucullata*, *Viola debilis*, *Trillium sessile*, &c.

10th. The Lombardy poplars in leaves. In blossom *Phlox divaricata*, *Pavia pallida*, (Buck-eye,) *Ranunculus mutabilis*, (N. Sp.) *R. abortivus*, *R. Bulbosus*, &c.

12th. In blossom, *Enemion biternatum*, (New Genus,) *Hepatica parviflora*, *Viola pubescens*, *Podophyllum peltatum*, &c.

18th. In blossom, *Stylypus geoides*, (New Genus,) *Stellaria pubera*, *Veronica serpyllifolia*, *Cerastium pedunculatum*, *Dodecatheon album*, (N. Sp.) *Prunus pendula*, (N. Sp.) &c.

20th. Peas, Currants, Gooseberries, and Strawberries in full blossom.

25th. The locust, *Robinia pseudacacia*, began to blossom Also *Stylophorum* Nuttall, *Cyanotris pratensis*, New Genus, (*Helonias angustifolia*, Michaux?) *Veronica marylandica*, *Geranium maculatum*, *Arabis bulbosa*, &c.

Animals. The first Martins were seen in the snow storm of the 2d; they became common on the 6th. On the 11th were heard the first frogs.

Transylvania University, 1st May 1820.

No. 5. RESULTS FOR MAY 1820.

Temperature. The weather was mild and temperate. The lowest degree of cold was 34 degrees of cold only, and the highest degree of heat only 74 degrees, difference 40: average medium of temperature 54 degrees. Greatest daily difference from 40 to 65, or 25 degrees.

Atmosphere. There were eighteen fair days, six cloudy and overcast, and seven rainy or stormy. The days were all fair from the 14th to the 25th.

Rain. The rain fell in showers on the evenings of the 9th, 14th, and 28th, wind commonly West or W. N. W.; throughout the day on the 12th and 29th, wind S. W. and N. E.; in a thunder storm in the afternoon of the 5th, the evening of the 25th, and the night of the 7th, wind W. Average of rain fallen nearly two inches.

Snow. None fell this month.

Frost. White frosts happened on the nights of the 1st, 17th, 18th, and 19th, which did but slight injury to vegetation.

Winds. The prevailing winds were N. W. which blew twelve days, and S. W. eleven days, W. three days, S. three days, and two days partially N. E. and North.

Thunder. There were heavy thunder gusts on the 5th, 7th, and 25th, and slight ones on the 12th.

Ground. It has been generally dry, and the roads good.

Vegetation. 1st. The Rye was in full blossom.

8th. The first strawberries were ripe. Clover fit to cut.

10th. All the forest trees in leaves except the Walnut.

12th. The first cherries were ripe.

20th. The first green peas appeared.

The following plants were in blossom this month, *Hydrophyllum hirtum*, (Shawnee Sallad,) *Arumtriphyllum*, (Indian Turnip,) *Staphylea trifoliata*, *Uvularia perfoliata*, &c. besides a great many others, and on the cliffs of the Kentucky river *Viola viridiflora*, *Aquilegia canadensis*, *Pentostemon pubescens*, *Arabis falcata*, *Aselepias quadrifolia*, *Smyrnium integerrimum*, *Ptelea trifoliata*, *Arenaria divaricata*, *Phacelia bipinnatifida*, *Asarum virginicum*, *Sedum ternatum*, *Sedum pulchellum?* &c. &c.

Transylvania University, 1st June 1820.

LITERARY INTELLIGENCE.

The author of *Ivanhoe* has written another novel entitled "THE MONASTERY," which has been republished in the United States, but has not yet reached us in the west. The Reviewers speak variously of its merits. Blackwood's Magazine, one of the most eminent publications in Edinburgh, mentions it in terms of the warmest eulogy. Our countryman, Mr. Walsh, pronounces it the worst, while he intimates that *Ivanhoe* is the best, of the productions of its celebrated author. In our next we shall probably give our readers some account of it, and express our own opinion respecting it.

A work has been recently published in England and republished in the United States purporting to be the *Historical Memoirs of Napoleon Bonaparte*, written by himself, "containing an authentic history of the events which occurred in France from the period of the emperor's return in 1815 until the battle of Waterloo, including a variety of observations on the conduct of the generals opposed to him on that memorable occasion." Sir RICHARD PHILLIPS, the editor of the Monthly Magazine, speaking of this work, says—"The announcement of this *unquestionable* production of Napoleon as the *second* manuscript from St. Helena proves that he recognises the first as his; and, indeed, we have the authority of Dr. O'Meara for stating that the first manuscript from St. Helena, as well as that from Elba, were undoubted productions of Napoleon. Hitherto public opinion has been divided on the subject; and the works, in consequence, have lost much of that importance to which they were entitled." Marshal Grouchy, on the contrary, pronounces the work last published totally destitute of authenticity, as it relates to those parts in which he is concerned. We believe also, that the English Reviewers generally regard it as spurious. The first manuscript from St Helena and that from Elba have long since been considered as forgeries both in England and in this country.

Anastasius, or Memoirs of a Greek, a work somewhat after the manner of *Anarcharsis*, has been recently published. It has by some been attributed to the pen of Lord Byron, by others to that of Mr. Hope, an artist in London. It professes to be a delineation of the state of manners in modern Greece. We shall probably notice it more particularly hereafter.

The poetical works of Judge Trumbull are about to be published for the benefit of the author. They deserve the patronage of the American public.

The SKETCH BOOK of Mr. Washington Irving, the first five numbers of which we noticed in our last, is spoken of by some of the British Reviewers in the warmest terms of praise. Blackwood's Edinburgh Magazine mentions Mr. Irving as a man of a "happy and genial order of mind," and then remarks—"He is the sole author of the Sketch Book, a periodical work now in the course of publication at New-York, from which numerous extracts have appeared in the Literary Gazette and in many of the Magazines; none of which, however, seem to have known from whose genius they were borrowing so largely. We are greatly at a loss to comprehend for what reason Mr. Irving has judged fit to publish his Sketch Book in America earlier than in Britain; but at all events he is doing himself great injustice by not having an edition printed here of every number, after it has appeared in New York. Nothing has been written for a long time, for which it would be more safe to promise great and eager acceptance." The editors then notice particular parts of the work, and make copious extracts, particularly from the article entitled the Royal Poet, and then proceed thus—"The style in which this is written may be taken as a fair specimen of Mr. Irving's more serious manner. It is, we think, very graceful, *infinitely more so than any piece of American writing that ever came from any other hand, and well entitled to be classed with the best English writers of our day.*" This, considering the source from which it comes, must certainly be regarded as very high praise: it is placing the author of the Sketch Book in the foremost rank. We are glad the merits of an American writer can sometimes be discerned—or rather sometimes be *acknowledged*—by British critics.

The PORT FOLIO, one of the oldest and most justly celebrated literary publications in our country, has recently assumed the form of a quarterly work.

The NORTH AMERICAN REVIEW, published in Boston, has fallen into able hands. Its two last numbers, issued under the superintendence of its new editor, the Rev. Edward Everett, Professor of Greek Literature in Harvard University, are calculated to reflect no small credit upon our country. The work, if continued in the same style, will inevitably assume a rank, not at all behind the most

conspicuous publications in Europe. The talents it displays, the rich fund of learning it contains, will place it above the sneers of the literary dictators of Great Britain. We wish it all the success to which it is so eminently entitled. We do not intend, however, to be considered as sanctioning all its opinions or as approving the spirit of all its articles.

A poet, it seems, has recently arisen in the west, who has ventured to publish, in Cincinnati, a work consisting of 52 octavo pages, entitled "AMERICAN BARDS, a modern poem, in three parts." As no copy has, to our knowledge, yet arrived in Lexington, we are not able to pass our judgment upon it. It is, we understand, as its title imports, intended as a satire upon the American writers, who have attempted to attain the elevated rank of poets. Whether the author has included himself among the number we are not informed. The work is anonymous, but its writer is said to be well known in Cincinnati.

An interesting little periodical work, entitled the CLUB ROOM, has recently made its appearance in Boston. Some of the earliest numbers we have seen. It does not make very high pretensions; but it contains some humor, and is well calculated to occupy agreeably a leisure hour. In the first number the editors observe—"We can anticipate just who will be our subscribers. We shall have all the learned and enlightened world; they will come to enrich themselves from the treasures of knowledge that we shall lay open, and to drink deep of the cup of wisdom we shall fill for them. We shall have the whole political world; for we intend to write on both sides of all political questions. We shall have all the fashionable world; for we shall make it our object to contribute to their enjoyment by affording a constant supply of subjects for conversation. Gentlemen, who have no wits of their own, will be furnished with a substitute, that will answer all their purposes, without requiring any labour on their part. We shall also throw in gratis some of our cast-off jokes, that will do very well to retail in the intervals of a cotillon, or to fill up a pause at a dinner party." Again—"We will assure our readers, that if they do not find something here to please them, it will be their own fault, for we shall have variety enough for any sensible man in the world." So much for the promises of the Editors, as it respects their own productions. It seems however, from the following, that we are not to expect much excellence in the

communications they will publish. "We have," they observe, "a little box at our publisher's bookstore, where we shall be ready to receive communications from every body. We shall occasionally select the best and keep them, to light our cigars with; for, (as the secretary observes) *we* can write better. The worst we shall publish; for we do not think any of us will be able to write as bad."

Lord Byron has finished two more Cantos of DON JUAN, the publication of which may shortly be expected.

Mr. Philip of Liverpool is about to publish a new life of Whitefield.

Mrs. Opie has published a new work in three volumes entitled Tales of the Heart.

The following new works have also been recently issued from the English Press; viz.

The Fudge Family in Italy; by the Author of the Fudge Family in Paris.

The River Duddon, a series of Sonetts, and Vandracour and Julia, with other poems, by W. Wordsworth.

The Radical Triumvirate; or Tom Paine, Lord Byron, and Surgeon Lawrence, colleaguing to expel religion from the earth, and emancipate mankind from all laws, human and divine; by an Oxonian.

The mystery; or, Forty Years ago; a Novel, in three volumes.

Italian Mysteries, or more Secrets than One; by Francis Lathom.

Geraldine; or Modes of Faith and Practice, a tale, by a lady, in three volumes.

The Mock moralist, a Novel, by Mr. William Gardiner.

POETRY.

AD H..... M.....*

Ad te scis tremulas, quæ vertit, vespere, pennas
Noctem hiememque timens
Ales, et interitus per se servata periclo,
Quæ fuit illa ne scis?

* See the verses to a Bird by H. M, in the 6th Number of the 1st Volume of the Western Review.

Anne tibi visa est volucris formidine nimbi
Poscere tecta viros?
Quæque, volens, hominum fidei se credere notæ,
Compedibusque pedes?
Credas: illa fuit mendax Cithereia Proles,
Tu sibi visa Parens,
Nec mirum: Charites tecum celebrare choreas
Noverat ad numeros;
Forsitan et dulces arguto e gutture voces
Fundere te audierat;
Tractus et illecebris petiit tua limina noctu,
Mane novo fugiens;
Et tibi notus Amor miseræ nunc ille fuisset,
Et fluerent lacrymae,
Sed vidit gratæ indicium de pectore flammæ,
Novit et illud opus,
Et fugit: Mariam, te terque, quaterque beatam
Cui fuit æquus Amor,
Cui tenero Di riserunt, et ridit ab ungue
Semper amica Venus!
Et mihi visus Amor supplex, mentitus et ora
Et faciem pueri.
Nox erat illunis: fundebat Jupiter imbres
Æthere præcipites.
Robur et æs triplex mea non præcordia cingit,
Nec fuit Hæma parens,
Sic mea oberranti reserata est janua flavo,
Quod sero nunc doleo:
Arcum intuitus timui, gravidamque pharetram,
Aligerosque humeros;
Attamen ad flammam puerum admovi, gelidasque
Stringo manus manibus;
Leniter alarum madidas et comprimo pennas
Auricomumque caput
Cum tepefactus, ait: probandus nunc mihi nervus,
Læsus an imbre fuit.
Protenus hunc fatus tendit, pectusque sagitta
Sauciat ille gravi.
Et ridens volitat: lateri noctuque, dieque
Hæret arundo meo.
Ardeo, quæ forma est pulcherrima et ore, puellam,
Virginibusque decus.
Nam, veluti flores olet inter condita, pallens
Vere novo viola,

Alba sicut specie vincit Latonia nymphas,
Sic mea vincit eas,
Nec templa incedens visa est Pelopeia Virgo
Pulchrior Argolicis.
Illius ingenium qui dicam, quam Phœbus amavit,
Castaque Nata Jovis!
Et me Phœbus amat, cithara donavit et Illam
Mi celebrare dedit.
Sæpe Cupideneis æternos edidit alis
Pulsa chelys sonitus,
Atque Beatricis, Lauræ immortalia tempus
Nomina Amor docuit.
Nec vulnus doleo, almæ si, me vate, Puellæ
Sæcula vincat honos.
Et vincet. Mariæ hæc vivent sub nominis umbra,
Carmina perpetuum.

Lexingtonii.

TO A BEAUTIFUL AND INTELLIGENT GIRL ON HER BIRTH DAY.

If Princes, rob'd with sovereign power,
And Kings of wide extended sway,
Make poets string a high toned lyre,
To celebrate their natal day:

Surely a kind and fervent friend
May claim it as his pleasing duty
To pour forth blessings on the day,
That brought to life an artless *Beauty.*

For Kings' and Princes' sway I ween,
Is fraught with tyranny at best;
While Beauty, clothed in nature's smiles,
Controls the empire of the breast.

Then deign, fair maid, a listening ear,
To friendship's kind and pure devotion;
O'er winter's waste an early flower,
Thou ros't to kindle warm emotion.

Like Lapland's rose, that sweetly blows,
Under a cold and cheerless sky;

So hast thou smiled o'er winter's wild,
The light and charm of every eye.

Bright is the beam of early morn,
And soft is Zephyr's balmy sigh;
More bright the smile that decks thy face,
And softer is thine azure eye:

And softer still is thy pure breast,
Where Envy will not dare to come,
Where modest Worth enshrines itself,
And Love and Pity find a home.

Thou little Sylph, with soul serene,
To thee the magic pow'r is giv'n;
To wake in hearts elysian dreams,
And lead the captive soul to heaven.

May each returning year, dear girl,
Bring hope, and joy, and bliss;
And, from some dear enamour'd friend,
A warm and soul-dissolving kiss.

From the German of Kleist.

DITHYRAMBUS.

(Freund! versaime nicht zu lehen:)

Haste! the joys of life to taste;
Improve the moments as they fly;—
The magic scenes will soon be past,
And we ourselves, alas! must die.
Waternever reached the heart,
Physic's ten times worse than this!
'Tis *Wine* can soothe the body's pains,
'Tis wine can bathe the soul in bliss!
Wine, sparkling wine, is nature's balm;
Say, what imparts the roseate die?
Then crown the bowl with finest flowers;
Drink—joy and glee at bottom lie!
Let Bacchus' flagrant altars blaze,
Semele's son his tribute claims!
But Love the alternate triumph shares,
Now Love the swelling heart inflames!

U & Y.

ENIGMAS.

The following Enigmas originally appeared in Latin in the Journal of Belles Lettres published in Lexington on the 26th day of February 1820. The translations are now for the first time laid before the public.

FIRST ENIGMA.

"Est Graium nomen: Charites risere, Venusque,
Nascentique, scio, fidit Amor pharetram.
Anni ter seni jam: excultum mentis acumen;
Dulcia verba melos: conspice—nosce—cave."

TRANSLATION.

Grecian the name she bears: the Graces smil'd,
And sea-born Venus, on their favorite child.
To her, the god of love his quiver lends;
To thrice six years her blooming age extends.
The taste and judgment of a cultur'd mind
With feeling, wit, and fancy are combin'd.
In measures sweet she pours her mellow song,
While echoing chords the enchanting tones prolong.
Let him, who knows and sees the maiden fair,
Guard well his heart, the traitor-god beware.

SECOND ENIGMA.

"Virgineum, ut mores, nomen; sed nupta: Camœnæ
Donarunt citharum: Jupiter ingenium.
Dulce-loquens et dulce-canit, licet Anglica verba.
Os, faciesque vocant oscula....sed vetitum."

TRANSLATION.

The Virgin's name, and virtues too, though wed,
The accomplished subject of my verse adorn;
On her, their richest gifts the Muses shed;
A mind is hers, of Heaven's own radiance born.
Though English words in her mild accents flow,
The soul of melody and love is there;
Her cheek and lip with angel sweetness glow,
And tempt to joys that ONE alone may share.